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Modernist Theatre, Theatricality, and Twentieth-Century Physics

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Declaration

I declare that this thesis has been composed solely by myself, is the product of my own work, and has not been submitted, either in whole or in part, for any other degree or professional qualification. All content, except where explicitly stated by reference, is my own.

Amos Abrahams

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Acknowledgements

I have more knowledge at the conclusion of this thesis than I did at its outset but I am also more profoundly aware of that which I do not know, of the vastness of the ocean of understanding into which, as one further droplet, this work is cast. I am unsure as to which of those aspects of knowledge is the more satisfying but I have no such uncertainty about the fact that this thesis would not have been possible without the presence and support of a number of other individuals and organisations who deserve acknowledgement here.

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Abstract

For all of their many differences, Gertrude Stein, Bertolt Brecht, and Samuel Beckett have in common the fact that they have each exerted a significant influence upon the way in which theatre is both conceived of and produced in the twentieth, and now the twenty-first, century. Brecht's extensively theorised Epic theatre established a new method of acting and relationship with the audience; Beckett's increasingly minimal stage plays powerfully interrogated and challenged limits of theatricality. The landscape plays of Gertrude Stein, whilst the subject of less critical attention, were no less radical and have similarly instructed the thinking of a number of major contemporary playwrights, producers, and theatre companies. Further to that, however, this thesis argues that an understanding of the notions of theatricality developed by all three of these playwrights must also take into account their engagement with, or connection to, the revolutionary theoretical advances made in physics during the first decades of the twentieth century.

There has been, increasingly, a number of insightful investigations into the relationship between twentieth-century physics and prose, and physics and poetry, but so far very few that consider theatre in the same terms. Noting the long and complex relationship that has existed between science and theatre since Plato, this thesis seeks to add to this body of research by showing how the ideas and implications of quantum mechanics provided not just a source of potential themes but also played an important role in determining the manner in which these three writers re-conceptualised theatricality. Whilst leading theoretical physicists often found it expedient to utilise metaphors of the theatre when seeking to explain the ideas and the problems at the heart of their work, these same issues also provided a means of approaching differently the creation of theatre. Central to this argument are the ideas of an epistemological crisis within science and its philosophy, the

entailments of embodiment, and the notion of theatre conceived of as a mode of enquiry in its own right.

As physicists such as Niels Bohr, Werner Heisenberg, and Erwin Schrödinger, as well as numerous philosophers of science, grappled with the problems of indeterminacy and measurement that quantum mechanics presented, theatre-makers took these same changes within the scientific project as one of the tools by which they could change their own creative medium. Sharing with science a critical interest in the relations between bodies, with existence and presence within both time and space, and with the role of observation, theatre, whilst often positioned as antipodal to physics is, in fact, guided by a number of similar fundamental ideas. As physicists were forced to reassess the basis and the potential of their method, Beckett, Brecht and Stein were able to similarly reformulate the mechanics and assumptions of theatricality. This engagement is traced and evidenced through close examination of their published works as well as their letters and journals. Writing with little to no communication with one another, the three playwrights in question each drew upon significant aspects of science in different ways. Stein, in addition to having a broad awareness of contemporary events, studied under William James, whose ideas were to be claimed as an influence by Bohr; Brecht spoke with scientists working in Copenhagen under Bohr, and also numerous émigré philosophers of science in California; and Beckett spent many years reading, with scepticism, about the development of rationalist thought and science.

Grounding the analyses of each of these playwrights' writings in a theoretical framework that works to set out and examine the basis of the relationship between science and theatre within the long tradition of Western thought, this thesis argues that the issue of representation underpins and connects them both. By bringing together the powerful conceptual metaphors of the *Weltbild*, or 'world picture', and

the *theatrum mundi*, or ‘world theatre’, and addressing their significance within systems of knowledge and expression, it is argued that on a fundamental level understandings of theatricality and of science are dependent upon one another. This idea is explored at the start of the thesis by returning first to Plato and then following a critical line of argument through Nietzsche, particularly his *The Birth of Tragedy*, to Heidegger and Heisenberg.

Lay Summary

This thesis examines the ways in which three major Modernist playwrights engaged with science, particularly contemporary physics, in their attempts to create new forms of theatre. These playwrights, and theatrical innovators, are Bertolt Brecht, Samuel Beckett, and Gertrude Stein; each of these figures, in their own way, radically re-thought the nature and potential of stage performance. There are numerous differences between the forms of theatre developed by Brecht, Beckett, and Stein but this thesis argues there are also many significant similarities, and that those shared qualities benefit from being considered in relation to science.

Theatre and science might initially appear to be an unusual pairing but, in fact, they have a long, if troubled, relationship that traces back to Plato and his immensely influential criticism of theatre and theatrical representation. At the heart of the issue is the fundamental question as to how people experience and understand reality: since Plato, there has been a tendency in Western culture and thought to hold theatre to be a distraction from the greater knowledge provided by philosophy and science. Plato's famous allegory of the cave is perhaps the earliest and most powerful illustration of this relationship: that underground cavern from which all people should seek to free themselves is, crucially, a theatre. What this thesis undertakes to show, however, is that, although theatre had long been the subject of prejudice, at the start of the twentieth century the situation changed, and that major developments that took place in physics were influential in enabling that.

Einstein's theory of General Relativity was a monumental achievement that made him an international celebrity; at the same time, though, the research that was carried out into quantum behaviour over the course of the first three decades of the twentieth century caused an even greater upset within science. The physics involved in both Relativity and quantum mechanics is incredibly complex but what

makes it so important to this thesis is that re-awakened philosophical concerns within a discipline that had defined itself from the start as being distinct from them. More importantly still, this thesis contends, the metaphysical issues that physicists were having to contend with were those that are also central to debate that surrounds theatre. One of the things that makes quantum mechanics so conceptually challenging from a scientific perspective is that it appears to refuse a clear distinction between subject and object, and to deny the possibility of a sub-atomic world that is understandable without reference to ourselves. Within the arguments and debates that took place, the question as to whether or not human reasoning could ever be entirely removed from our embodied existence was frequently contested: the same basic question that had haunted Plato. What this thesis undertakes to show is that the so-called crisis in physics during the Modernist period was one that effectively elevated the idea of theatricality from being antithetical to knowledge and inquisitive thinking to being, instead, the foundation upon which that must ultimately rest. Theatre is not simply a distracting copy but can, itself, be a mode of thought.

Considering each of the three playwrights in light of that general argument, this thesis examines their work and interactions more specifically so as to provide a new understanding of the ways in which they rethink performance and theatrical convention. For Stein, this consists of exploring her concept of the landscape play in conjunction with her acquaintance with William James and Alfred Whitehead, two philosophers with important connections to quantum mechanics. Brecht is more explicit in his interest and what is to examined at length is his claim to have created a theatre of the scientific age. Finally, whilst Beckett is more commonly studied in relation to philosophy he also had an abiding, and connected, interest in the natural sciences, and it is to be argued here that his ideas concerning the claims and

methods of modern science and physics had a notable influence upon his thinking about the space and time of the theatrical experience.

Contents

Introduction

Theatre and science have historically not been on the best of terms: alongside philosophy, their relationship within Western culture has been, as Alain Badiou notes, consistently distant and frequently "dreadful" ('Theatre and Philosophy' 93). The situation that obtains within existing scholarship is not always much better for the three playwrights and theatre-makers brought together here for analysis: Samuel Beckett, Bertolt Brecht, and Gertrude Stein are seldom, if ever, examined in conjunction. Beckett and Brecht, especially, are frequently taken to be "divergent, even incompatible" in terms of their work (Antony Tatlow, 'Saying Yes and Saying No' 11) whilst Stein, on the other hand, is rarely even acknowledged to have written for the stage. To counter such previous criticism, however, this thesis examines two basic propositions: first, that Modernism oversaw a revolution in physics as well as a radical reimagining of theatre, and that common to both was a critical concern with the concept of theatricality; second, that, despite their differences, each of the playwrights to be studied here engaged with question of theatricality through reference to physics on various levels.

In making those two propositions central to its approach, this thesis also works to redress the notable paucity of research into the relationship between theatre and not only physics but science more generally. Indeed, whilst in relatively recent years there has been a notable rise in the popularity of what might be termed 'Literature and Science' as a field of study this has indeed, for the most part, been pointedly literary in its focus. Daniel Albright's *Quantum Poetics* (1997), Michael Whitworth's *Einstein's Wake* (2001), Peter Middleton's *Physics Envy* (2015) all stand as examples of studies that present rigorous and deeply insightful surveys into interrelations of physics and Modernism but that do so without any significant

consideration of the formal concerns of theatre as a medium in addition to those of poetry and prose. It is not without some justification, then, that in *Science on Stage* (2006) Kirsten Shepherd-Barr is able to not only argue for theatre's "pride of place as the site of substantive interaction between the hard sciences and the humanities" (1) but to also introduce her book as being "the first full-length analysis of this interdisciplinary phenomenon we are . . . calling science plays" (1). If it was the first such study then it remains, still, one of the only ones, although the historian Tiffany Watt Smith's *On Flinching* (2014) does provide an interesting account of the "affinity of scientific observers and theatrical audiences" (7), albeit one that is primarily restricted to Victorian physiological experiments. Whilst *Science on Stage* marks a welcome intervention into critical discourse on the behalf of theatre, Shepherd-Barr, however, also conducts her analysis within a relatively limited set of parameters that this thesis seeks to expand: those of the so-called science play.

The validity of the science play as a concept, or even as a phenomenon, is not to be disputed here and, indeed, they have a place within this study: Brecht's *Life of Galileo* and Stein's *Doctor Faustus Lights the Lights* are both works to which the label can be applied. The problem with focusing on science plays, however, is that they are, by definition, essentially simply "plays about science" (Shepherd-Barr 2); what this thesis is instead interested in exploring is not just individual plays but, rather, the more fundamental issue of theatricality itself. Beckett, for example, wrote no science plays and yet the nature of his theatre, it is to be argued, is deeply informed on one level by a sustained critical engagement with the epistemological claims and problems of physics. Similarly, neither are the vast majority of Brecht's and Stein's plays centred around specific scientific figures or ideas; works such as *Galileo* are the exception rather than the rule in that regard. Accordingly, by broadening the scope of inquiry, it is the overall conceptualisation

of theatre that each of those three playwrights developed that is subjected to analysis in this thesis: Stein's idea of the play as landscape; Brecht's anti-Aristotelian Epic theatre; and Beckett's increasingly minimal theatrical aesthetic, so problematically, if enduringly, designated by Martin Esslin as being part of the Theatre of the Absurd (27). Taken as such, each figure's writing for the stage can be more deeply contextualised within the broader debates and concerns pertaining to Modernist theatre and performance.

Within the theatres of Modernism it was the case that, as Olga Taxidou has argued, playwrights and theatre-makers were as interested in experimenting with form as much as they were with content (*Modernism and Performance* 50). By rethinking the potential afforded by theatre's formal qualities, which are grounded in the ineluctable presence of the human body within performance, the Modernist makers and theoreticians of theatre worked to further the notion of performance as being in itself an "autonomous aesthetic activity" (2). In this respect, Modernist theatre was, therefore, not only an immediate reaction against the specific conventions of the Naturalist theatre that had emerged during the previous century, but also part of a deeper critique of the position of mimesis within the Western philosophical tradition that stretches back to Plato and Aristotle (Martin Puchner, *Stage Fright* 25). It is precisely that interaction that makes the relationship between Modernist theatre and physics as critically significant as it is critically overlooked: the scientific revolutions precipitated by General Relativity, early quantum theory, and later quantum mechanics were also forcing physicists to re-engage with the same philosophical problems of representation and observation.

Part of the same cultural zeitgeist, physics during the first decades of the twentieth-century can in many ways be seen to have had a Modernist moment of its own (Jan Kucharzewski 500), its leading figures Modernists in their own manner

(Tim Armstrong, *Modernism* 115). It is difficult to summarise, here, both briefly and exactly, the situation that came to obtain within physics during that period but, in general terms, it was characterised by epistemological upheaval and two radical new understandings of physical reality. In the first instance, there was Albert Einstein's refutation of Isaac Newton's notion of absolute space. According to the theory of General Relativity, "the concept of space detached from any physical content does not exist" and, instead, the "physical reality of space is represented by a field whose components are continuous functions of four independent variables – the coordinates of space and time" (Einstein, 'On the Generalized Theory of Gravitation' 348). The profound ramifications of that had scarcely been fully acknowledged, however, before quantum mechanics was formalised over the course of the 1920s and in turn undermined the fundamental precepts of modern science to an even greater extent. Whilst Einstein maintained a belief in an objective reality that could be fully described (Steven Weinberg 252), those physicists involved in the development of quantum mechanics questioned the possible extent of scientific knowledge and cast into doubt the strict divide previously held to exist between subject and object. To that end, Werner Heisenberg's Uncertainty Principle, central to quantum mechanics, asserts an absolute limit to our ability to fully account for subatomic particles at any one moment in time. What Heisenberg states is that, due to the physical nature of scientific measurement, it is impossible to be simultaneously certain of both the position and the momentum of a particle, and that his equation establishes the parameters within which those terms can be meaningfully used (*The Physical Principles of Quantum Theory* 15). An objective description of the quantum world is therefore effectively proscribed.

There is evidently still a certain need to establish more comprehensively the shared philosophical foundations of those two instances of radical change and innovation, theatrical and scientific, in order to fully expose the imperative for analysing them in close conjunction. Accordingly, the first task undertaken by this thesis is the development of a new theoretical approach to theatricality, and one that critically incorporates physics as well as philosophy. To do so, Chapter One interrogates the notion of scientific representation and the claims that it makes about reality, and it does so with particular reference to the idea of the 'world picture' that became increasingly important within discussion about physical theory at the start of the twentieth century (Thomas Ryckman 291). Outlining the fact that the concept, and the debate surrounding it, is rooted in Platonism, the chapter argues that it must also be seen to be closely entangled with issues relating to theatricality: whilst Plato may well have been the "master of anti-theatrical philosophy" (Taxidou, *Tragedy, Modernity and Mourning*, 35), much of his writing and thought is nevertheless determined by that which he so disparaged. The fact that Plato expounded his ideas in the form of scripted dialogues is something that is frequently noted in this regard (Freddie Rokem 5) but what the argument in Chapter One focuses on is, instead, the allegory of the cave presented in Book VII of *Republic*. Showing that the philosophical schema that Plato proposes in his allegory serves to denigrate theatre whilst simultaneously also making theatricality a necessity to its conceptualisation of reality, Chapter One asserts that the problems surrounding the concept of the world picture in twentieth-century physics need to be seen as involved in the "old quarrel" between philosophy and theatre that Plato both identified and helped to perpetuate (*Republic* 351).

This notion of physics as being entangled in the long durée of the contentious relationship between philosophy and theatre is established further in Chapter One

by examining the critique of Western metaphysics and Platonism that Friedrich Nietzsche introduces in *The Birth of Tragedy* and that is later taken up by Martin Heidegger. Referring to Nietzsche's early work as being an important instance in which science and theatre were considered together, the argument presents a reading that focuses less on what Nietzsche writes about tragedy and the tragic specifically and more upon his claims regarding the nature and limits of the methodologies of rational thought and investigation. In these terms, Nietzsche's contention that tragedy will only be reborn when science reaches its limits and "logic coils around itself and finally bites at its own tail" (84) are taken to illustrate a way in which theatricality can find a means to assert itself on a more even footing with philosophy and science. Chapter One then moves from this to consider Heidegger's essays on modernity, the world picture, and science as a means to examine in more depth the question of representation and the historical divergence between theatre and theory despite their shared etymological root. Additionally framing that reading of Heidegger within the context of his historical dialogue with Heisenberg, what the chapter ultimately works towards, in light of the situation that arose during the Modernist period, is the conceptual synthesis of three different but related forms of 'seeing' and theory: that of science, that of philosophy, and that of the theatre. Arguing that the problem, or issue, of human embodiment is necessarily crucial within that synthesis, Chapter One both reaffirms and expands existing arguments for the theatre's potential to literally *perform* a kind of speculative thinking, or to *theorise*, about reality and human experience.

Having outlined the philosophical precedent for considering the relationship between theatre and science in broad terms, the subsequent chapters of the thesis then undertake to analyse the particular ways in which Beckett, Brecht, and Stein can each be seen to engage with, and develop, that idea. Moving forward to

consider these playwrights in a broadly chronological order, Chapter Two examines how Stein's writing both for and about the theatre reacts against earlier understandings and practices and demands, instead, a new conceptualisation of theatrical space and experience. Stein's approach in that regard is argued to be informed not only by the general awareness within her cultural milieu of the fact that significant developments were being made in physics (Ulla Dydo, 'Introduction' 3) but also by her close personal and intellectual acquaintance with figures such as William James and Alfred North Whitehead. James' work in the field of psychology and philosophy was held to be of importance by Niels Bohr (Gerald Holton, 'Roots of Complementarity' 174), and Whitehead's later writings as a philosopher of science and a metaphysician engage deeply with the problems that are posed by quantum mechanics. Considering Stein's awareness of these important disturbances to some of the foundational premises of science in conjunction with her own radical engagement with the stage, Chapter Two works toward an understanding of her concept of theatricality as being one that also presents a rethinking of the scientific world picture.

The argument moves toward a reading of Stein's late play *Doctor Faustus Lights the Lights* as being a particular critique of Enlightenment rationality and science, but one that is grounded in the nature of performance as much as it is in the content itself. Before undertaking that analysis, however, the chapter first works to address one of the main issues involved in studying Stein's theatre: its lack of critical recognition in its own right. Despite the fact that Stein is noted to have been influential for later playwrights and directors such as Richard Foreman and Robert Wilson (Christopher Innes 201; Elinor Fuchs, *The Death of Character* 91), there is very little existing scholarship that considers her own plays as being intended for performance, or that even considers them at all (Julia Fawcett 139). In light of this,

Chapter Two conducts a close reading of Stein's essay 'Plays' and a number of her works for stage so as to counter the persistent tendency within criticism to assert that Stein's plays are anti-theatrical closet dramas; it is argued instead that theatricality and performance were integral to her conceptualisation of the theatre.

In Chapter Three the argument turns to focus upon Brecht, a figure whose status as a playwright and theatre maker is much less disputed than Stein's. It is his claim to have created a theatre "of the scientific age" (*Messingkauf Dialogues* 124) that is taken as being of particular interest. Whilst there exists a large body of critical literature concerning Brecht's Epic theatre there have so far been strikingly few attempts to consider it in relation to the physical sciences, especially physics. This situation continues despite the fact that Brecht makes numerous explicit references in both his journals and his theoretical writings to the work of twentieth-century physicists, as well as the great emphasis that he places on Galileo as a historical figure. Chapter Three undertakes to argue that the scientific age for Brecht was defined to a great extent by the emergence of modern science as a distinct method for generating knowledge during the seventeenth century, and that he recognised the significance of what quantum mechanics implied for method and the understanding of the world that it supported. The importance of societal concerns and Marxist ideology to Brecht is neither ignored nor denied in this thesis; instead, it is argued that of equal importance to the theatre that he developed is the idea of engaged spectatorship, a "new art of being a spectator" (*Brecht on Stage*). Brecht's new conception of spectatorship is then read as working to enforce the efficacy of theatre on two distinct but related fronts: both political and epistemological.

Examining in detail key elements of Brecht's Epic theatre, such as gestus and the *Verfremdungseffect*, Chapter Three argues that Brecht found in his encounter

with quantum mechanics a powerful new set of ideas with which to rethink the importance of observation within an explicitly theatrical context. Drawing first upon a range of Brecht's writing, including his theoretical *Messingkauf* and 'A Short Organum for the Theatre', the analysis then moves to a reading of *Galileo* and the notes and fragments of the play *Life of Einstein*[1] that he started planning in 1955 shortly before his death. It is argued that these pieces exemplify the fact that Brecht was concerned not solely with the social responsibility of scientists but also with the epistemological claims and methods of science, as well as the theatricality that underlies them. Positioning Brecht's work within the framework established by Chapter One, it is shown that although he does have concerns about the potential harm that science can effect he is also interested in the way in which developments in the twentieth century have enabled a form of theatre that has the critical autonomy to help remedy this.

Chapter Four moves, finally, to consider Beckett as a figure who, like Brecht, assigned within the context of his theatrical aesthetic a specific significance to Galileo and the emergence of modern science (Dougald McMillan and Martha Fehsenfeld 231). Whilst Beckett, like Stein, makes relatively few explicit references to the physics of the twentieth century, what the concluding chapter of this thesis works to show is, firstly, that he did have an awareness of the issues involved and, secondly, that this was an influence upon his long interrogation of the capacity of reason. As was the case with Brecht in Chapter Three, the most immediate challenge that posed by a study of Beckett's oeuvre is volume of existing scholarship. Despite this, however, whilst there has been a great deal written on the subject of Beckett and philosophy there has to date been significantly less that considers his work in relation to science (Nicolai Duffy 43). One of the main tasks

[1] These fragments are currently untranslated; the German title is *Leben des Einstein*.

that Chapter Four undertakes is, therefore, to establish the extent of Beckett's documented awareness of twentieth-century physics and to position this in relation to both his other philosophical preoccupations and the development of his own distinct theatrical aesthetic. It is argued that the critical interest that science held for Beckett is found in its epistemological claims and that, within his thought, this is positioned in close dialogue with the development of Western philosophy, as well as to the issues of representation and observation.

As Beckett differs from Brecht and Stein in the fact that he did not write at any great length about his own ideas concerning theatre, Chapter Four takes a largely hermeneutic approach in establishing the manner in which Beckett's long-standing intellectual interests were brought together through his experimentation with theatricality. To do so, the chapter first conducts a close-reading of the unpublished drafts of the late work 'Long Observation of the Ray', arguing it to be a text that is in many ways a reflection upon the problem at the heart of much of Beckett's theatre. Following that, the argument then moves to examine the ideas of embodiment, the senses, and the limits of rationally obtained knowledge that are presented within 'Long Observation' in further detail through readings of a number of plays, including *Footfalls*, *Play*, and *Not I* in conjunction with Beckett's notes on physics. Highlighting also Beckett's critical engagement with theatrical conventions, as is evidenced by his extensive stage directions and focus on the question of presence of bodies on the stage, Chapter Four makes the claim that Beckett finds in theatre the means to expose the theatrical foundations of the scientific and philosophical world picture outlined in Chapter One.

In undertaking that analysis, this thesis does not, ultimately, propose that all approaches to Modernist theatre should take science into consideration, and nor does it aim to be prescriptive in that manner. Instead, by exploring at length the

new dynamic that developed between physics and theatre following the turn of the twentieth century, the argument expounded over the course of the following chapters has a more general aspiration: to further consolidate the imperative to view performance and theatricality as possessing greater critical and aesthetic autonomy. As research into the relationship between physics and the formal aspects of literary and visual Modernisms continues to expand, this thesis proposes that a move to consider theatre in similar terms both has great precedence and is long overdue.

Chapter One

Settling an Old Quarrel on a New Stage: Theatre, Science, and the World Picture

> There is little ground for believing that the current world view of physics has directly influenced the development of modern art or could have done so. (Werner Heisenberg, 'The Representation of Nature in Contemporary Physics', 95)

This bold assertion, from one of the architects of quantum mechanics, was made in 1953 in a lecture given as part of a symposium on 'The Arts in the Technological Age', sponsored by the Bavarian Academy of Fine Arts. As an event, the symposium provided the setting for a fascinating encounter between two preeminent intellectual figures of the twentieth century: also included prominently on the lecture program was Heidegger, and it was in fact upon his insistence that Heisenberg attended (Cathryn Carson, 'Science as Instrumental Reason' 493). Historically and culturally situated within the same post-war context that helped to shape Brecht's approach to his planned *Einstein*, the Munich symposium had its roots, to an extent, in the "anxious discussions about the social role of science and technology" that were pervasive in society at the time (Richard Beyler 227). Those particular roots are held, here, to be only partial in their extent because, whilst framed and made particularly pertinent by contemporaneous societal concerns, the arguments expounded by both Heisenberg and Heidegger engage primarily with the deeper, more general, question as to the fundamental character of science, particularly the natural sciences. The claims made by both men in that regard are of considerable interest here but equally striking, given the ostensible focus of the symposium, is the fact that neither Heisenberg nor Heidegger actually devote much time to explicit consideration of *art*.

It is Heisenberg's words that open this chapter because, contrary to what might perhaps ordinarily have been expected, it was he and not Heidegger that had the most to say about art, modern or otherwise, in relation to science. Not that that, in this instance, implies any great number of words on the subject: in 'The Question Concerning Technology', as well as the preparatory essay 'Science and Reflection', Heidegger mentions art only once, fleetingly and without much of an attempt to elaborate upon his claim that it is a "consecration and a refuge" for the "long-hidden splendor" of "the real" ('Science and Reflection' 156). If Heisenberg was effectively only marginally more forthcoming in his thoughts on the subject of art, his reference to it in his two introductory paragraphs is, nevertheless, significant in terms of establishing a precedent for examining the relationship in more detail. His claim concerning the potential interaction between modern art and contemporary physics, whilst bold, is however also almost immediately rendered ambiguous in its meaning. After first stating that there is little ground for holding science to have been influential upon modern art, Heisenberg proceeds to argue that "we may believe that the changes in the foundations of modern science are an indication of profound transformations in the fundamentals of our existence" (95). These changes and transformations, he then contends, "certainly have their influence in all areas of human experience" (95). So, it transpires that things are not quite as simple as they initially seemed; Heisenberg's reservation primarily hinges around the idea of the directness of potential relationships. Certainly, he must hold some kind of influence to be possible because he then proceeds directly to add that, from his point of view, "it may be valuable for the artist to consider what changes have occurred during the last decade in the scientific view of nature" (95).

Heisenberg is effectively, if perhaps unintentionally, throwing down the gauntlet with his lecture's opening statement on science and modern art. It lands most

obviously in front of “the artist” who might, in Heisenberg’s opinion, find value in turning toward recent changes in scientific outlook. It is also, however, a challenge to anyone seeking to examine the relationship between science and art in the twentieth century, as Heisenberg’s claim contains numerous issues of its own. Speaking of the “little ground for belief”, Heisenberg fails to acknowledge the fact that there are numerous cases in which just such an influence is evidenced; this is due, perhaps, to his being, first and foremost, a physicist and not an art critic, or possibly because at the time some of these influences had yet to be made apparent. Moreover, the difference between direct influence and something coming via ‘the fundamentals of our existence’ remains relatively unclarified both in that instance and throughout the rest of the article, insofar as it pertains to art.

This chapter therefore works to respond, with particular reference to theatre and theatricality, to the challenges that Heisenberg’s statement presents, as well as to the ideas that drew him and Heidegger together at the Munich symposium in 1953. The subsequent chapters will analyse in much greater detail the various ways in which Beckett, Brecht, and Stein, as playwrights and theatre makers, engaged with the situation in contemporary physics; the argument here, however, will work towards establishing the general basis upon which they did so. Accordingly, the task in this first instance is to establish exactly how and why the relationship between theatre and science is much more significant than Heisenberg appears to allow, as well as why this became of particular importance during the Modernist period.

1.0 Establishing common ground between science and theatre

In some ways, the encounter described above sounds a little like an extended version of a somewhat niche academic joke: a philosopher and a physicist come

together to talk about art… and talk instead about philosophy and physics. The question is, to transform the joke into a magic trick: where did art go? The answer, it is to be argued here, is that it went nowhere: despite being almost entirely ignored by both Heisenberg and Heidegger in terms of what they say explicitly, the idea of art is central to both of their arguments due to the emphasis that they each place upon representation. In starting to establish exactly how that is being understood to be the case here, and its relevance to Modernist theatre, Walter Benjamin's study *The Origin of German Tragic Drama* proves useful. At the beginning of the 'Epistemo-Critical Prologue', Benjamin contends that one of the defining characteristics of philosophical inquiry is that "it must continually confront the question of representation" (27). As Benjamin sees it, the reason for this constant engagement with the same issue lies to a significant extent in the fact that Platonism acts as a foundation for much of subsequent Western philosophy (30). Whilst a little more measured than Whitehead was when he suggested that the "safest general characterization of the European philosophical tradition is that it consists of a series of footnotes to Plato" (*Process and Reality* 39), Benjamin's position is in actuality not too far removed from that. The question of representation is perennial for Western philosophy because, whether accepted or refuted or ostensibly ignored, the Platonic model maintains a persistent and influential presence and, within that model, the issue of representation is central. Moreover, and of particular significance here, representation for Plato is closely entangled with the problem of art.

For Plato, art was indeed problematic and his long-standing reputation as an "enemy of art and literature, and particularly any that involves copying or imitation" (Catherine Osborne 55) is testament to the approach that he took toward it in his philosophy. This is not, however, the place for a full consideration of the complex

reasons behind Plato's aversion to representational art and the details of his various injunctions against it; aspects of that will, though, be considered in more depth later in this chapter, when properly framed. Instead, what is of more immediate importance in this instance is the fact that Platonism positions art as being directly antagonistic to philosophy (Freddie Rokem 13), particularly in terms of Plato's preoccupation with questions of truth, reality, and an ideal society. Representative art, as it is described in *Republic*, is "an inferior child born of inferior parents" (346). Plato claims it to be both "far removed from truth and associated with elements equally far removed from reason" (346), unlike philosophy, through which a person is able by means of reason to contemplate truth (322). As an additional justification for the stance he adopts, Plato also proffers a supposed historical precedent for his argument: "in case we are condemned for being insensitive and bad mannered", he writes, "let us add that there is an old quarrel between philosophy and poetry" (351). This old quarrel, which he also describes as an "ancient antagonism" (351), is one that Plato works hard to perpetuate; he also positions theatre as being the most dangerous opponent for philosophy in this ongoing agon.

Plato inveighs particularly vehemently against theatre, or "dramatic poetry" as he more frequently refers to it (*Republic* 346), because he views it as not only operating at a distance from that which is true but also as actively working against the best interests of the state. Theatre, Plato argues in *Republic*, appeals to the "lower elements of the mind" to the detriment of the higher, has a negative effect on audiences, and thus he would deny dramatic poets a place in a properly governed society (348). Indeed, he goes so far as to argue in his later work *The Laws*, when surveying historical forms of government, that Athenian democracy was corrupted by a rise of "vicious 'theatrocracy'" (108): a "general disregard for the law" emerges,

Plato claims, when public audiences cease to be silent and instead proclaim themselves to have knowledge and authority (108-109). As much a product of his times as anyone else, Plato's writing in this regard reflects the fact that, as Karl Popper contends, a great deal of his philosophical system exists on one level as a critique of Athenian politics (*The Open Society and Its Enemies* 16). Perceiving the state in which he lived to be troublingly subject to corruption, decay, and flux, Plato made central to both his philosophy and his ideal republic a belief in "perfect and unchanging things" (Popper, *Open Society* 19). Theatre, for Plato, was antithetical to these ideal qualities because neither of them obtained within it and because, rather than trying to remedy this, it worked instead to distract people and perpetuate societal decay.

This political potential first accorded by Plato to theatre as a form of representative art becomes of notable significance within the Modernist period although, as Taxidou notes, it is often precisely the supposed "dangerous and subversive aspect of all theatrical representation" that appealed to playwrights such as Brecht (*Tragedy, Modernity and Mourning* 115). The Modernist renegotiation of the relationship that Taxidou identifies as having historically existed "between the aesthetic and the political" (115) will, however, be examined further in its own right in Chapter Three. Instead, at this point, in working to establish the theoretical precedent for examining theatre in relation to science, and to show why theatricality critically underpins the arguments of both Heisenberg and Heidegger, the argument needs to take a brief inwards turn. The centrality of the question of representation to the Western philosophical project has been outlined, as has the fact that the idea of theatre is particularly important within that understanding, but what still needs to be considered is the issue as to exactly what it is that 'theatricality' and 'theatre' denote.

Both of those terms, as Samuel Weber usefully states, have a complex history and are “anything but self-evident or unambiguous” (1). Be that as it may, a functional definition here can be established by, in the first instance, drawing a distinction between theatre and theatricality that is broadly equivalent to that which the Russian Formalists drew between ‘literature’ on the one hand and ‘literariness’ on the other. First setting out this idea in his 1921 essay ‘Recent Russian Poetry’, Roman Jakobson argued that the object of literary inquiry is “not literature but *literariness*, that is, what makes a given work a literary work” (qtd in Boris Èjxenbaum, 8). The difference in this sense, then, is a qualitative one: literature as a form of text and literariness as its set of determining characteristics. Similarly, theatre is to be taken, here, as being a specific “representational genre” (Weber 30) whereas theatricality consists of the “aesthetically specific properties of the stage” (Patrice Pavis, ‘Discussion on the Semiology of the Theatre’, 28). Whilst theatricality does pertain strongly to theatre understood in that manner, it is however also important to note, like Tracy Davis and Thomas Postlewait, that it is not an exclusive relationship: theatricality can be, and has been, abstracted as a concept from the stage into other aspects of life and culture (1). During the Modernist period in particular, the potential afforded by the concept of theatricality in this broader context became of renewed interest and, indeed, it is understood by some as being “intimately related to the rise of the modernist theatre director” (Teemu Paavolainen 1). The reason for this lies, once again, in the philosophical roots of the problem of representation; in analysing this, the critical common ground between science and theatre can then be introduced.

Modernist thought, Davis and Postlewait contend, often identifies theatricality as being the antithesis of Realism, and yet Realism itself also has a history of being “seen as but one type of theatricality” (1). At the root of that situation is the concept

of mimesis that was introduced by Plato in *Republic* and which is central to his objection to theatre (Osborne 55). Whilst theatricality and mimesis are not exact equivalents in the strictest sense they have, as Matthew Potolsky also notes, been closely associated with one another for so long that it has become almost impossible to entirely separate them (72). For Plato, mimesis is problematic because it embodies instability, pertains to the senses, and establishes a distorted version of ideal reality (Weber 38). The concept is first addressed in Book III of *Republic*, with specific reference to theatre, as Plato moves to consider the manner in which the "subject-matter of literature" is presented (86), and it is connected to the difference between direct and indirect speech in poetry. Mimetic representation is figured in those terms as being speech that is made "in the person of someone else" and, through that, the assimilation of "oneself to another person" (87). Dramatic poetry, in the form of tragedy and comedy, employs, Plato argues, only mimesis, only representation (88); in that reading of theatre as being governed exclusively by mimesis is the basis for the long and "agonistic relationship between tragedy and philosophy" that Taxidou has examined at some length (*Tragedy, Modernity and Mourning* 6). To add to that here, though, it is to be argued that Plato's expansion of the concept of mimesis later in *Republic* provides a means by which to reassess the troubled relationship between theatricality and philosophy through the lens of science.

To speak of Plato 'expanding' the scope of what mimesis means is to refer to the fact that in Book X of *Republic* the term, which had already accrued strong theatrical connotations, comes to stand for art in its entirety and is more completely integrated into his metaphysical system. Moving away from the focus that was earlier placed on the educational and civic functions of poetry, Plato, in setting out his theory of art, considers representation not just in terms of characters and their

actions but in relation also to the more fundamental, and more contentious, notion of ‘reality’. The problem that Plato finds with mimesis in this respect lies in the fact that, as he sees it, an artistic likeness of something provides no knowledge of its “reality but only about its appearance” (343). This was for Plato in many ways a material issue, in the literal sense: his philosophical preoccupation with the notion of an immutable ideal realm was grounded, to a significant extent, in the question as to how that world related to the decidedly less perfect phenomenal world of the senses. Art, and particularly that of the theatre, as a form of expression was seen by Plato as having no justifiable position because it could offer only the imitation of already corrupted material objects (Osborne 56). It is at this point that the question of science, as it is to be analysed over the course of this chapter, must enter into the argument.

If art, as mimesis, was essentially rejected by Plato for its perceived inability to provide access to the ideal world, then that should not be taken to imply that he was not concerned with the world that it did imitate. Indeed, following Popper, it is to be held here that as much as Plato “despised [the] empirical world of flux, he was, at bottom, most deeply interested in it” (*Open Society* 26). The conflict within Plato’s position in respect to the empirical world is to be taken in this chapter as, on one level, further underpinning the one of the most frequently noted paradoxes of his work: namely, that despite their constant criticism of theatre, Plato’s dialogues are theatrical in “the deepest sense” of the word (Rokem 5). In most existing studies that consider theatricality at length, including Rokem’s *Philosophers and Thespians*, this aporetic element of Platonism is, when noted, generally considered in terms of a philosophy-theatre binary. In many cases, too, it should be acknowledged, such an approach is indeed effective in opening up the debate concerning both fields. This thesis, however, proposes a divergence from the

existing critical convention on that issue and suggests instead, that, to better understand the twentieth-century re-conceptualisation of theatricality, the existing binary needs to be expanded to also include science, particularly physics. The reasoning behind this is grounded in the fact that science is as unable as theatricality and philosophy are to disentangle itself from issue at the heart of Platonism.

In order to outline the basis for such an approach, reference to Popper's critique of Plato again proves useful. Commenting further on the philosophical challenges that the empirical world posed for Plato, and the question of representation, Popper suggests that the primary issue was one of *method*. The "fundamental problem" for Plato, Popper argues, was to devise a "scientific method of dealing with sensible things . . . to obtain purely rational knowledge, and not merely opinion" (*Open Society* 28). This endeavour was complicated in turn, however, by Plato's own insistence that a 'pure' knowledge of the sensible was not possible; as a result, he was led to a form of compromise wherein he insisted instead upon simply "obtaining at least such pure knowledge as was in some way related, and applicable, to sensible things" (28). The theory of Forms, or Ideas, is the key to enabling the success of that compromise, as Popper sees it: it is an "important methodological device" that "makes possible pure scientific knowledge, and even knowledge which could be applied to the world of changing things" (28-29). Through this reassessment of the focus of the Platonic system, the distinction between mimesis and that which Plato opposes it with becomes a little less distinct. Plato wished to attain knowledge of a material world existing in a state of constant flux; artistic representation could engage with this world but it was an ineffective method for describing anything other than appearance or action; accordingly, he moved from this to try to develop an ostensibly *better* methodology.

The system that Plato devised in an attempt to improve upon the knowledge claims of mimesis is one that is characterised by something that Popper refers to as “methodological essentialism” (*Open Society* 29), an approach that entails belief in the idea that it is the task of “pure knowledge or ‘science’ to discover and to describe the true nature of things” (29). The primary aim of methodological essentialism is to address the question of *what* something is; this is in contrast to methodological nominalism which concerns itself, instead, with the issue of describing *how* something is experienced to behave (30). There are two points to be made here, the first of which is that, within the schema developed throughout Plato’s writing, theatre, and mimesis in general, are effectively positioned as being the nominalist counterpart to his essentialist methodology. The second point to be made is that Popper’s repeated invocation of ‘science’ and the ‘scientific’ is not incidental but is, instead, of considerable significance. The use of those terms themselves in this context is technically slightly problematic, as will be discussed further in the next section of this chapter but, by introducing them, Popper, a preeminent philosopher of science, works to establish that science also has an important connection Plato’s ‘old quarrel’. The manner in which that idea is set out is of particular value here in starting to return to the twentieth-century debate between Heisenberg and Heidegger, and to further consolidate the need to analyse the relationship that developed between physics and theatre during the Modernist period.

Remaining with the idea of Plato as having expounded a view characterised by methodological essentialism, Popper proceeds to provide a significant point of connection for theatricality and science by then noting that “methodological *nominalism* is nowadays fairly generally accepted in the natural sciences” (31; italics added). First published in 1945, *The Open Society and Its Enemies* is a work

that is roughly contemporaneous with the arguments developed by both Heisenberg and Heidegger in Munich, and so Popper's description of the natural sciences in such a manner needs to also be considered in that same context: historically situated, that is, after the formulation of quantum mechanics. Accordingly, the general acceptance of methodological nominalism that Popper posits to exist in the physical sciences is one that is both complex and that had also been the result of a period of profound epistemological unsettlement. Indeed, a tension of sorts between the two methodologies in these terms at that time is, in fact, usefully highlighted by Brecht in *Einstein* when he writes that "Einstein saw his best students turn, themselves, from the question of Why to the question of How (Quantum theory)" (984; my translation[2]). Central to the debate within physics during the twentieth century was, by this reading, the question as to what knowledge science could provide and how it could do so. Equally, it is to be argued that when Heisenberg refers in the title of his lecture to the representation of nature in contemporary physics he is, in fact, addressing the idea of physics *as* a form of representation with all the theatrical connotations of that term, even if those go unacknowledged.

At this point it should be emphasised that although Heisenberg did not pay any significant attention to the idea of theatre, his reflections upon science were, however, generally, and increasingly, informed by an awareness of its position as part of the long durée of Platonism that has been outlined here. He is particularly explicit about this in a later article, 'Tradition in Science' (1973), when he states that quantum mechanics has led to the need to return to a "very old tradition" (235); that is, for a change of foundational concepts from those of atomic materialism to those

[2] "Einstein sieht seine besten Schüler sich von der Frage des Warum zur Frage des Wie wenden (Quantentheorie)"

of Plato's fundamental symmetries (235). What Heisenberg's 1953 lecture in dialogue with Heidegger does very effectively introduce, though, is a particular understanding of science that became especially significant in those terms during the first decades of the twentieth century: that which Bas van Fraassen describes as the *Bildtheorie*, or the "picture theory of science" (1), from which the idea of the 'world picture' critically emerged. The exact pertinence of that idea to Heisenberg's lecture is somewhat lost in the English translation of its title, which sees the German term *Naturbild* rendered as 'representation of nature', but both versions are together useful in evidencing the way in which mimesis has persisted as an important issue for both science and philosophy. Whilst, as a term, *Naturbild* provides a more immediate semantic connection to art, the word *Bild*, denoting an image or a picture, also delimits the full historical connotations of the concept of 'representation' upon which it stands. Accordingly, whilst the term 'world picture', from *Weltbild*, is going to be used extensively throughout this chapter as a result of the predominance of German-speaking physicists and philosophers in the development of quantum mechanics and the debate surrounding that, it is also going to be argued to be a concept that is, fundamentally, defined by theatricality.

Indeed, having at this point established the grounds upon which the question of art, and particularly theatricality, can be seen to underpin debate between Heisenberg and Heidegger, despite their focus seeming to be on science and philosophy, this chapter will now move to further address the relationship between physics and Modernist theatre by means of critically analysing the concept of the world picture. The first step in doing so will be to consider in more detail the situation that obtained within physics during the first decades of the twentieth century, so as to establish the important connections that existed between the *Bildtheorie* debates, the rise of theoretical physics, the development of quantum

mechanics, and the epistemological crisis of positivism that Günter Berghaus holds to have marked the birth of Modernism (23-24). Once that has been undertaken, the next step will be to take the understanding of the world picture that emerges from that and examine in more detail both its grounding in Platonism and also, from that, the reason as to why the twentieth century was particularly important for re-conceptualising theatricality. To do so, the argument will both analyse the allegory of the cave found in Book VII of *Republic* and consider Aristotle's ostensible defence of theatre before moving forward to examine, first, Nietzsche's *The Birth of Tragedy* and then, finally, Heidegger's own writing on science, theory, and the world picture. Holding Heisenberg and Heidegger in relation once more at the end, with the question of theory and theatricality more fully integrated into the debate, the starting point for the subsequent chapters of this thesis will be established.

2.0 *Bildtheorie* and the emergence of quantum physics

2.1 Science and/or philosophy?

A necessary prelude to consideration of early twentieth-century physics is a brief outlining of what 'science' meant at the time because, as was alluded to earlier, the terms of its usage are not always straightforward. To introduce this, it is useful to first consider the so-called crisis that developed in physics as having two distinct, yet closely related, aspects. On the one hand, advances in technology assisted the production new experimental data and the work of physicists such as Marie Curie, Ernest Rutherford, Wilhelm Wien, and Charles Wilson provided increased access to the atomic world. On the other hand, the task of making sense of the new data and the means by which it was attained grew to be increasingly challenging for physicists. The second of these is arguably the most problematic. As Einstein argued in a short essay 'Remarks on Bertrand Russell's Theory of Knowledge', the

issues encountered by physicists at the time forced them “to come to grips with philosophical problems to a greater degree than was the case with earlier generations” (19). This grappling, or coming to grips, would not be so remarkable, nor the occasion of a physicist commenting upon a philosopher so intriguing, if not for the fact that physics had since the seventeenth century attempted to hold philosophy at some distance.

The significance of the seventeenth century in this regard is that it is generally perceived to be the period during which modern science emerged (van Fraassen 270; Steven Weinberg 101). Whilst the term ‘scientist’ itself, as it is currently understood, did not exist before 1833, when it was coined by British polymath William Whewell (David Wootton 28), figures such as Galileo, Francis Bacon, Robert Boyle, and Isaac Newton can viewed as being some of the founders and first practitioners of modern science. There is a need, here, to refer to *modern* science because, although the term ‘scientist’ is relatively new, ‘science’ has a longer history: etymologically, the English word is drawn from the Latin *scientia*, denoting knowledge (29); as an idea, however, science, as Erwin Schrödinger states, might well be seen to be “a Greek invention” (*Nature and the Greeks* 90). What distinguishes modern science from the older tradition was the move, made by numerous major intellectual figures in the period leading up to the Enlightenment, to establish a new importance to methodology in the pursuit and establishment of knowledge about nature as a physical reality.

For those figures instrumental in the emergence of modern science, method was, as Steven Shapin notes, “meant to be all” (90). Whilst there were divergences of opinion as to the exact form that it should take there was a consensus on the idea that it was methodical thought that enabled knowledge of nature to be secured with certainty (90). The method that eventually ascended to prominence was one

that was largely grounded in empiricism and, in its doing so, it forged a significant divide between natural philosophy and philosophy more generally. Simply put, within nascent modern science there was no place for metaphysical speculation; ideas drawn from directly observed phenomena were what were required, and Helena Sheehan attributes to Newton the eminently quotable imperative "physics, beware of metaphysics" (42). Whilst this exact expression is somewhat hard to locate within Newton's writing it does nevertheless summarise to a certain extent a passage from the 'General Scholium' at the end of *Principia*, in which he states:

> . . . whatever is not deduced from the phenomena must be called hypothesis; and hypotheses, whether metaphysical or physical, or based on occult qualities, or mechanical, have no place in experimental philosophy. In this experimental philosophy, propositions are deduced from the phenomena and are made general by induction. (943)

In this experimental philosophy, or what came to be called science, it is physical phenomena that must be accorded primary importance; it is this direct, sensuous, engagement with nature that was to create and consolidate a certain divide between science and philosophy as they moved forward. It is also this same issue that underlies Einstein's comments several centuries later. After a period of relative exclusion, metaphysical and epistemological issues were once again becoming central to the science that had sought to estrange itself from them (Henk de Regt 16). In reinvigorating the relationship between physics and philosophy the potential for wider debate and influence also significantly increased.

The reason for this change in intellectual dialogue, and also one of the issues foundational to the crisis outlined earlier, was an increasingly problematised understanding as to what both 'reality' and scientific representation could be taken to be. Although even from the outset modern science was challenged by the issue of how to reconcile the "scientific characterization of reality . . . with the very different way in which things appear to us" (van Fraassen 270), it did however firmly maintain the idea that an objective reality existed. It is in that vein that Galileo

argues in *The Assayer* that the “qualities of shape, number, and movement would still exist even if . . . there are no living creatures to perceive them” (121). The task of the scientist was to provide an account of such qualities and uncover the laws that governed them; accordingly, Newton opposes the use hypothesis because he holds that the laws of nature are inherent within nature and so should be drawn from it and not imposed. As modern science, and particularly physics, continued to develop, however, the question as to the object of scientific representation grew more complicated, as too did that of its notion of realism; with this, the long and vexed history of mimesis also entered a new chapter. Whilst it is to be argued here that this occurred most significantly during the first decades of the twentieth century through the development of quantum mechanics, that particular epistemological crisis is itself closely implicated with the broader *Bildtheorie* debate initiated by the physicist Ludwig Boltzmann in 1890 (de Regt 217).

The *Bildtheorie* was introduced by Boltzmann to, in equal parts, both react against the role of mechanistic modelling and explanation in science (de Regt 185) and address “the epistemological question of whether (and if so, how) scientific theories are representations of reality” (216). The idea had a deep influence upon science’s conception of itself and so by examining this, and also its particular connection to quantum theory, this chapter can then continue to make the case for its relevance to theatricality. In doing so, the argument will take as its primary focus Max Planck’s lecture on the notion of the world picture, but will position this within the broader context.

2.2 Representation in science: atoms, quanta, and the world picture

Many of the most important names in physics, from any period, are associated with the emergence and eventual formulation of quantum mechanics: Bohr, Einstein,

Heisenberg, and Schrödinger; also, not already mentioned in this thesis, Max Born, Louis de Broglie, Paul Dirac, and Wolfgang Pauli, amongst others (Weinberg 261). The first, and crucial, discovery in the development of quantum theory was made, however, in Berlin at the turn of the twentieth century by another physicist: Planck. There is some degree of irony in this as Planck was in many respects, as John Heilbron notes, a scientifically conservative man who managed to initiate in 1900 a "revolution that he neither wanted nor welcomed" (*Dilemmas of an Upright Man* vii). What led to this was Planck's solution to the problem of black-body radiation that had been causing difficulties for physicists since the 1850s.

An idealised object, but one that can be closely approximated in a laboratory, a black-body is something that absorbs all radiation incident upon it and reflects none; it does, however, radiate light arising from its thermal energy (Robert Swendson 282). The problem was to account for the observed spectrum of light radiated when the black-body was maintained in different states of thermal equilibrium. It was a preoccupation with reconciling mechanics and thermodynamics that drew Planck to the problem of black-body radiation and, after three years of research, he managed to both achieve that and simultaneously also create a new opposition between "received physics and the consequence of his own work" (Heilbron, *Dilemmas* 19). Planck's solution involved the introduction of the new constant *h*, now named after him, and the idea that the energy of any system can be given as a value that is an "integer multiple" of that same constant, *h* (20). That is, that energy transfers were to be considered as if occurring in discontinuous units, or quanta, rather than as part of a continuum; a crude but helpful analogy often given to illustrate is the idea of being able to consume juice only by quaffing glasses in one go and not by sipping smaller amounts. Whilst Planck did hold his solution to be of great significance, reportedly telling his son

Erwin that the formula $E = hv$ was one of the most momentous scientific discoveries since Newton (Heilbron, 'Max Planck's Compromises' 26-27), it is also necessary to emphasise that he did not himself believe quantization to exist in nature.

When Planck introduced the notion of energy quanta in order to solve the problem of black-body radiation he saw it as being primarily a formal assumption, or a mathematical trick, that was only temporary and would later be removed in "the final formulation" (Helge Kragh 62). It was instead Einstein who, using Planck's Law in his pivotal 1905 paper on the photoelectric effect, introduced the concept of the photon and the idea that light might itself be understood as quanta. Einstein's work would then, in turn, contribute to the development of quantum mechanics, in which the description of the apparent wave-particle duality of light played an important part. Planck's concern regarding the reception that his work found within physics at the time was, then, grounded in the fact that something that he had considered to have no "physical reality behind it" (Kragh 62) was found by some of his contemporaries to be otherwise. During the three years spent researching black-body radiation Planck had already found himself forced to adopt new positions, becoming both increasingly impressed by Boltzmann and an enthusiastic rather than a reluctant atomist (Heilbron, *Dilemmas* 20); the influence of his quantum theory, however, affected Planck's thinking in what John Blackmore has described as a "grimly emotional" way (*Ernst Mach* 220). It is no coincidence that Blackmore mentions this in a biography of Mach and, whilst his language here might be seen to itself be unnecessarily emotive, he is certainly correct the assertion that quantum theory prompted a strong reaction from Planck.

As a result of this intellectual consternation, Planck began, despite ostensibly seeking to separate his physics from the concerns of philosophy (Daan Wegener

150), to engage further and more explicitly with philosophical underpinnings of the scientific project: its aims, its methods, its claims about reality, and its potential. Much of Planck's argumentation in this regard was indeed, as Blackmore posits, directed against Mach in defence of Boltzmann, whose statistical theory had proved useful in uniting mechanics and thermodynamics (*Ernst Mach* 220-221). Whilst Boltzmann is recognised for, amongst other things, the introduction of the idea, in his *Bildtheorie* methodology, of science developing 'pictures' as heuristic representations of a physical reality (Blackmore, 'Boltzmann and Epistemology' 161-162), Mach is perhaps most commonly received as having been a phenomenalist and anti-atomist (Robert Cohen 126). Neither of those labels are entirely inaccurate but, as Cohen also observes, they can problematically lead to the view that Mach's conception of science was somewhat of a simplistic cliché (126). Such an interpretation would belie the fact that Mach was a figure of great significance to both physics and the philosophy of science as they moved forward into the twentieth century, despite the fact that he himself claimed in his 1905 work *The Analysis of Sensations* to be "a scientist and not a philosopher" (47). That statement, though, is not particularly straightforward in its implications: what Mach opposed as philosophy was, specifically, metaphysics, which he held to be only "an illusion of knowledge" (Cohen 130). Rejecting philosophy in those terms Mach did, however, engage profoundly with positivism, albeit in a manner that was scientistic.

Mach's form of positivism was one that was both grounded in epistemological phenomenalism and conceived of as "a scientific theory of how and what scientists do when they are engaged in the practical activity of exploring, reflecting, calculating, checking, refuting, knowing" (Cohen 131). Whilst Mach's approach proved foundational to the logical positivist school that developed in Berlin, and his

epistemological position “very greatly” influenced a young Einstein (*Autobiographical Notes* 21), it was anathema for others. Vladimir Lenin inveighed against Mach and ‘Machism’ throughout his 1909 *Materialism and Empirio-Criticism* for what he saw as being an attempted refutation of materialism and a “rebirth of philosophical idealism” in physics (258); more pointedly, here, though, Planck also held Mach’s ideas to be almost heretical in their implication (van Fraassen 192). Strongly opposing the importance that Mach ascribed to physical experience, Planck’s antagonism found its most notable public expression in a lecture delivered at the University of Leiden in 1908, at the invitation of fellow physicist Hendrik Lorentz. The lecture, given on the subject of ‘Die Einheit des physicalischen Weltbildes’, or ‘The Unity of the Physical World Picture’ as it translates in English[3] (Peter Pesic ix), although ostensibly not concerned with Mach nevertheless operated, as Thomas Ryckman has noted, a particularly stinging critique of his conception of science (290). Accordingly, whilst it is Planck’s understanding of the scientific world picture that is to be of primary interest moving forward in this chapter, the parts of the lecture that make reference to Mach need also to be considered.

Planck does not devote much time in his lecture to direct reference to Mach, but in the instances that he does it becomes apparent that the ideas raised are important throughout his argument. Towards the end of his argument, Planck emphasises that his stance on the nature of physical reality is antagonistic towards that of Mach. “Is the physical world simply a more or less arbitrary creation of the intellect,” Planck asks, “or are we forced to the opposite conclusion that it reflects

[3] In some later versions and translations this appears instead as ‘The Unity of the Physical Universe’. The variation is not problematic for the argument being made here; if anything, the semantic discrepancy serves to underscore the significance and complexity of what is understood by ‘world picture’.

phenomena which are real and quite independent of us?" (22). Affirming that he holds the latter option to be the case, Planck then positions this response within the context of contemporaneous debate:

> I am certain that this answer is . . . contradictory to a tendency of natural philosophy (recently introduced by Ernst Mach) which is in great favour in scientific circles. According to this, nothing is real except the perceptions, and all natural science is ultimately an economic adaptation of our ideas to our perceptions . . . . (22)

In referring to the adaptation of ideas to perceptions, Planck paraphrases almost exactly Mach's claim in *The Analysis of Sensations* that the "adaptation of thoughts to facts . . . is the aim of all scientific research" (316), but it is the idea of this as being 'economic' that is in itself more significant. The notion of science as seeking to become ever more economical was first set out by Mach in *The Science of Mechanics* (1883), a work that is also widely noted for both its strong critique of Newton's conception of space and itself proclaimed attempt to eliminate metaphysics from science (Holton, 'Mach, Einstein, and the Search for Reality' 167). The function of science, as Mach saw it, was to "replace, or *save*, experiences, by the reproduction of facts in thought" because memory, he argued, is "handier than experience" (*The Science of Mechanics* 481). Taking a fact to be, in accordance to his epistemological positivism, that which is experienced, Mach argues science to assume an economising function through its formulation of laws that substitutes large numbers of individual experiences with a single expression that accounts for them all: there is, he posits, no law of refraction in nature, only many different instance of it (485-486). As such, according to Mach, science consists of the "completest possible presentment of facts with the *least possible expenditure of thought*" (490). The problem that Planck had, then, was not so much with the idea of economy in itself right but, rather, with what Mach held science to be being economical about.

For Mach, physics provided an abstract expression of experienced phenomena taken to be reality; for Planck, however, sense perceptions could not be ascribed such total primacy. It was for that reason that the two held such opposing views on atomic theory, a tension that also ran throughout the Leiden lecture (Ryckman 290). Whilst Atomism originally denoted the pre-Socratic materialist philosophy of Democritus and Leucippus (Elena Mamchur 93-94), during the period in which Mach and Planck were heatedly disagreeing with one another it referred more specifically to a theory built upon earlier research of John Dalton (Arkady Plotnitsky 31). This modern atomic theory was realist in the sense that it posited that non-observable entities, such as atoms, could still be held to exist; accordingly, Mach opposed this and argued instead that as they were not perceivable by the senses atoms were simply a "mental artifice . . . especially devised" for the purpose of explaining phenomena (*The Science of Mechanics* 492). Mach would maintain this position on the reality of atoms until his death, even following Einstein's 1905 paper on Brownian motion and Jean Perrin's 1908 experiments that together vindicated atomic theory (Blackmore, *Ernst Mach*, 322-323; Ryckman 289). Planck, on the other hand, had accepted the reality of atoms even before 1908; his fundamental disagreement with Mach lay in the fact that he believed that the aim of physics was to represent a reality not simply derived directly from perception: the fact that atoms were theorised before they were observed was, therefore, the opposite of a problem for him. The idea of the world picture that Planck established at Leiden evidences both a repudiation of Mach as well as an outline of the task of a *theoretical* physicist (Ryckman 290) and, indeed, he would further develop these ideas over the course of eight lectures delivered at Columbia University a year later.

The relationship between physical theory and physical reality is central to Planck's lecture on the world picture; he makes his position on this clear from the outset in stating that as long as science continues to exist "its ultimate highest aim will always be the correlating of various physical observations into a unified system, and, where possible, into a single formula" (1). It might be noted, here, that, despite everything, Planck's statement appears to resonate with Mach's views insofar as it calls for the condensation of observations; this is, however, only a superficial similarity. Planck does not deny the importance of senses to science, and indeed he emphasises in a subsequent lecture that the foundation of all physical research is "seated in our sense perceptions" ('Reversibility and Irreversibility' 3), but, equally, neither does he hold them to be all that physics can, or should, now draw upon. Simply attempting to relate sense perceptions to fixed laws, Planck argues, has never, and can never, "contribut[e] to any advance in physics" (4): to progress, the focus needs to move away from the phenomenal origins of ideas and towards, instead, using those ideas and laws to inform inquiry in turn. Accordingly, Planck's understanding of the statement with which he opens his Leiden lecture is not that science aims solely to correlate experiences; rather, he implies a more nuanced hierarchy wherein, in fact, the correlation of 'various physical observations' is a step towards attaining something that represents more than human experience. This is, however, a claim that is far from self-evident and much of Planck's lecture and its discussion of the world picture functions primarily to provide clarification of the position that he advocates.

Planck's notion of the world picture is interesting in that it utilises the language of the *Bildtheorie* whilst also ultimately diverging from some of its central ideas, particularly in terms of the scientific understanding of realism (van Fraassen 193-194). After conducting a prolonged exposition of various facets of the disagreement

he has with Mach's phenomenalist conception of science, Planck devotes the last section of his lecture to setting out, in more detail, exactly what he himself understands by the idea of a world picture and of its 'unity'. In doing so, Planck does not focus explicitly on atomic theory, or even on quantum theory, but instead reiterates the notion of there being a need within science to move away from a strict focus on the senses. Acknowledging, again, his own admission that physical theory has arisen from the assimilation of sensory and experimental data concerning various phenomena (4), Planck then also claims that the corollary of this is that there is a lack of fixity to current scientific account of nature:

> If we look at the question closely the older system does not form a single picture, but rather a collection of miniatures, for every set of natural phenomena has its own special picture. These different pictures do not coalesce. One can be removed without prejudice to the others, which will be impossible in the future picture of the world. (20)

In its heterogeneity, the system that Planck describes here (he uses the word 'older' but the situation is also contemporaneous, as he is talking about a future world picture) has the "glorious colouring" of human experience but it does not attempt to pertain to "knowledge of the absolute" (20). This, for Planck, is unacceptable and he holds that the perceived support of such a system, by people such as Mach, runs counter to the main concern of scientific research: "the finding of a *fixed* world picture independent of the variation of time and people" (24). Accordingly, Planck proposed the task of the scientist to be the development of a "non-anthropomorphic" world picture (Ryckman 291); the "system of theoretical physics should be adequate", Planck would go on to elaborate in his subsequent lectures, "not only for the inhabitants of this earth, but also for the inhabitants of other heavenly bodies . . . in so far as they possess the necessary intelligence" ('Reversibility and Irreversibility' 6).

In his call for the removal of anthropomorphous qualities from a unified physical world theory, Planck recognises certain key difficulties but he is also insistent upon

one particular point: the need to recognise the existence of a definite, unchanging, reality. On one level, Planck can be seen as suggesting this to be stasis and constancy within the world picture; he writes:

> In physics we may correctly state that the present [world] picture has certain properties, and, although it varies in its hue according to the individuality of the worker, no revolution in Nature or Man can obliterate these properties. This constancy, independent of all human and intellectual individuality, is what we call reality. (24)

In the German original, the final clause is “was wir das Reale nennen” (*Die Einheit des physicalischen Weltbildes* 35) and so, whilst its translation using the term ‘reality’ is perfectly functional it is also useful here to consider it as ‘the Real’, as the philosophical connotations that that has resonate more clearly with some of the philosophical undertones of Planck’s overall argument. The idea of a world picture that unites constants, such as the principle of energy (24), as being reality, or ‘the Real’, is also a difficult one in terms of what it implies about Planck’s views concerning representation in science. The means by which to start to unravel Planck’s contention in this regard can be found, here, through reference back to his earlier claim about “knowledge of the absolute” (20).

To clarify, when Planck argues that a science concerned only with phenomenalist epistemology cannot claim to obtain a knowledge of ‘the absolute’[4], he grounds this in another acknowledgement of the fact we cannot fully escape our senses; as such, Planck states, there can never be any “direct” encounter with the objective physical world he holds to exist (20). The question for Planck is, then, essentially that of how, as humans, we can attain a complete account of a fundamentally non-anthropomorphous universe. A significant part of this, as had been said, lies for him in the ultimate transition from “the complete adaptation of our ideas to our perceptions” to, by contrast, “the complete liberation of the physical

[4] “des Absoluten” (*Die Einheit des physicalischen Weltbildes* 29)

picture from the individuality of the separate intellects" (24). Following this reasoning, what Planck is first proposing in his Leiden lecture is, to a significant extent, a future world picture that is taken to be a complete representation, or as van Fraassen suggests "a true and accurate *copy*" (194), of an objective reality that we cannot directly experience. Planck's use of the term 'the absolute' as well as 'the Real' poses some problems, but on at least one level they can be used in his terms to denote two different key aspects within the overall model that he develops: the world picture as an ideal reality (Real) corresponds to a material reality (Absolute).

The implications of Planck's apparent position in this regard, which van Fraassen astutely notes suggests a seeming wish to embrace the "'representation' or 'picture' view . . . on a higher (deeper?) level" (194), already suggest a complex sort of connection with Platonism which is to be taken further in this chapter. In doing so, however, there is a final, very insightful, passage in 'The Unity of the Physical World Picture' that needs to be considered. In this section, coming near to the conclusion of the lecture, Planck more pointedly specifies as to how he thinks that the term 'world picture' should be used, and understood. He claims, to this end, that many figures responsible for significant advancements in physics, including Nicolaus Copernicus, Michael Faraday, and Newton, were able to do so due to their "fixed belief in the reality of their picture" (25) and not, that is, a belief that they were concerned only with personal experience. Further to that, notes Planck, those men "did not speak of their world picture, but only of the world or Nature" (25). Asking whether there is any distinction between the 'worlds' of those men and his own notion of a unified world picture Planck concludes that there is not. The term world picture itself has an additional, cautionary, function in that it keeps the issue of representation present within our thoughts, but it is also

possible, he states, to substitute it: by applying “the necessary foresight, and knowing exactly that we mean by ‘world’ nothing but the ideal picture of the future, we can, if we wish, substitute a single word and obtain a more realistic expression (25-6)”.

There is, in that notion of the possible substitution of ‘world’ for ‘world picture’, a certain resonance between Planck’s conceptual model and Jorge Luis Borges’ brief allegory ‘On Exactitude in Science’. In this allegory, Borges describes how the cartographers of an unnamed past empire, driven by the desire for perfect verisimilitude, strike a map “whose size was that of the Empire, and which coincided point for point with it” (181). Whilst it presents an interesting parallel to Planck’s account of the world picture, the imperial map as described by Borges in fact correlates more closely, on one level, with the understanding of physical theory that Planck sought to critique. The map, although positioned as comprehensive in its exactitude, is a representation of an empire, something essentially anthropological and inconstant, and as such can be readily recognised as “Useless” by future generations (181). Borges is, then, making effectively the same criticism as Planck; if such a perfect map as described in the allegory were to instead be viewed in terms of Planck’s notion of the world picture then its becoming useless would be an impossibility because the ‘empire’ it represents is absolute and constant. Importantly, too, Planck is not arguing for the reproduction of something that people have already outlined or experienced but, rather, the realisation of that which is not accessible.

In either case, it is evident that the question of representation, and what it means in the context of science, has become central to Planck’s thought at that point in his career, even if his own notion of scientific realism can be seen to have simultaneously faltered slightly in its expression (van Fraassen 194). In this, as with

his discovery of the quantum of action, Planck essentially unintentionally established himself as a bridging figure between a number of old and new approaches to physics. On the one hand, his anti-positivist world picture was championed by Einstein who, despite having initially distanced himself from it, came to recognise its future development as being the "supreme task of the physicist" ('Principles of Research' 26). Indeed, as quantum mechanics took shape over the course of the 1920s, Einstein and Planck overcame earlier differences and together attempted a defence of scientific realism (Erhard Scheibe 33), Einstein effectively reiterating Planck's position in a 1930 letter to Moritz Schlick:

> I tell you straight out: Physics is the attempt at the conceptual construction of a model of the *real world* and of its lawful structure. To be sure, it must present exactly the empirical relations between those sense experiences to which we are open; but only *in this way* is it chained to them…. In short, I suffer under the (unsharp) separation of Reality of Experience and Reality of Being (qtd in Ryckman 298)

If this taps into Planck's understanding of the physical world picture, and exemplifies the closeness of the two physicists on such matters (Holton, 'Mach, Einstein, and the Search for Reality', 189), it also marks, having been written in defence of a lecture Planck delivered weeks earlier on 'Positivism and the Real External World', a shared opposition to the claims of quantum mechanics (Ryckman 296-297). In that lecture, reacting against the perceived resuscitation of positivism by contemporaneous quantum physicists, such as Heisenberg, in their imposition of a fundamental limitation to human knowledge of the external world (Ryckman 296), Planck argues that such a theory simply "restricts the scope of science at its very start" and ignores the greater issue (qtd in Holton, 'Mach, Einstein, and the Search for Reality', 189). For Planck, this overriding problem lies exactly in the fact that what has been earlier referred to as 'the absolute' is not directly knowable. Planck holds that fact to disclose "the presence of the irrational, or mystic, element which adheres to physical science" and so, accordingly, to entail

that science can never “completely and exhaustively . . . solve the problem it has to face” because the issue is “of a metaphysical character” (qtd in Holton, 189).

Planck and Einstein present, in that regard, one particular response to the crisis in the positivist methodology that had been central to modern science. In developing the field of theoretical physics they maintained the original object of science but advocated a new approach wherein reason, or rational speculation, was increasingly privileged, as opposed to the purely empirical (Einstein, ‘Principles of Theoretical Physics’, 220-221). This in itself, though, still also marked a significant rupture within scientific tradition. On the other side of the debate, taking Planck’s findings ever further in the opposite philosophical direction, were the pioneers of quantum mechanics who had, effectively, introduced the positivistic crisis implied by Heisenberg’s work as the cornerstone of the new physics and had, in doing so, also abandoned the classical law of causality (Ryckman 297). Whilst Planck maintained a belief in a unified world picture, the theory of those such as Bohr and Heisenberg suggested instead that, as Popper states, physics had both “reached a limit in posing theoretical problems” and was also able to answer others only with a probability (*The Two Fundamental Problems of the Theory of Knowledge*, 448). For the early proponents of quantum mechanics the object of inquiry, in terms of elementary particles, had radically changed: “[t]he question whether these particles exist in space and time ‘in themselves’ can thus no longer be posed in this form”, Heisenberg argued (‘The Representation of Nature’ 100). It follows from that, Heisenberg states, that the “conception of the objective reality” of such particles has, because of the effect of any act of measurement, been replaced by mathematics that represents “no longer the behaviour of the elementary particles but rather our knowledge of this behaviour” (100). This view of quantum mechanics does not debar the existence of an objective reality but it does preclude

the possibility for physicists to provide a complete representation of it, such as that which Einstein and Planck sought; whilst Planck's future world picture is an ideal structure of non-anthropomorphous constants and causal laws, the world picture of quantum mechanics is, instead, acausal and probabilistic.

If it has been the fundamental uncertainty of quantum mechanics that has, to date, been vindicated it has also yet to be united with General Relativity, which remains our best theory of gravitation. In both cases, however, this debate that revolutionised physics at the start of the twentieth century finds itself rooted, as has been said, in the perennial question of representation in relation to knowledge. The idea of scientific theories as pictures, and of the 'world picture' became, it has been shown, increasingly significant and problematic; integral to that process, from the disputes with Mach to the debates of the 1920s onwards, was a tension between the phenomenal and the purely rational, between the objective of the material and the ideal. With its centrality to the concept of mimesis and representation, the old question concerning the nature of theatricality ran tacitly throughout the arguments concerning physical theory leading into the twentieth century but became more notable following Planck's 1908 lecture: in 1949 Bohr proposed that the dictum "one must never forget in the drama of existence we are ourselves both actors and spectators" was crucial to the understanding of contemporary physics ('Discussion with Einstein' 63). That particular notion is to receive greater consideration in subsequent chapters of this thesis, but moving forward in this instance the focus is to be placed upon a more general issue concerning theatricality that has emerged as attendant to the idea of the world picture.

There obtains within Planck's conceptualisation of the world picture, as well in the responses to it, an increasingly critical hierarchy of knowledge, at the bottom of which sits sense-perception as a troublesome foundation whilst above that is a

unified system of constants. That schema, regardless as to whether it was accepted or critiqued, or perhaps because of that, became the central to the debates within physics. What is now to be argued in this chapter is that there is a significant resonance between that twentieth-century concept and the philosophical model that Plato vividly establishes through his allegory of the cave, which also presents a fundamentally hierarchical approach to knowledge and reality. Without suggesting there to be exact congruence between Plato's cave and the notion of the scientific world picture as it has been examined to this point, the chapter will both set out the important similarities that do exist and also show how, from the outset, the idea of the world picture has been brought into being through theatrical thinking. Having done that, the argument will then proceed to analyse the historical vicissitudes of that issue: Nietzsche providing a valuable means for further integrating both Planck's claims about the metaphysical limitations of science as well quantum mechanics' positivistic restrictions; Heidegger providing another definition of the world picture that draws more explicitly on this philosophical tradition whilst also owing more to Planck than he acknowledges.

3.0 Plato's Cave: first staging of the world picture

The importance of Platonism as basis for discussion pertaining to Modernist theatricality and science has already been introduced in broad terms in the first section of this chapter; in returning to it now, the focus is to be placed more specifically upon the problematic relationship that he establishes between theatricality and the question of knowledge. In doing so, it is to be more closely argued that Plato's attempts to dismiss and distance himself from theatricality are undermined by its existence as the foundation for his thought; that whilst he might, as Taxidou argues, frame theatrical mimesis as being essentially a "bad

philosophy" (*Tragedy, Modernity and Mourning* 6) providing a degraded form of knowledge, he is unable to fully remove it from his philosophical system.

Rooted in his fundamental critique of flux and instability, Plato's writing marked what Russell refers to as being a "very important advance in philosophy" as a result of it having been "the first theory to have emphasised the problem of universals" (127). This is something that is also noted and related explicitly to guiding principles of modern science by Ilya Prigogine and Isabelle Stengers, who argue that the view that "only eternal laws were seen to express scientific rationality" (7) finds its origin in Platonism. These universals and eternal laws are figured by Plato in terms of his Forms, which are neither spatial nor temporal in their quality and so are "visible only to the eye of reason" (*Republic* 239). Striking though that metaphor of the 'eye of reason' might be, and indeed it would also be enthusiastically adopted by the thinkers of the European Enlightenment (Rainer Nägele 8), it exemplifies one of the main problems with Plato's conceptualisation of his own theory of knowledge. This problem is, generally speaking, that he grounds important ideas in metaphors whose own bases are often directly antithetical to the point that he seeks to establish. The concept of Forms that are only visible to the eye of reason is particularly significant because it relates strongly to both Plato's theory of knowledge as well as his anti-theatrical posture.

Alongside the universal Forms, Plato also introduced into Western philosophy the first major expression of a non-equivalence between knowledge and perception (Scheibe 32). In *Theaetetus*, written during the same period of his life as *Republic*, the question of knowledge in this respect is explored at length, as Plato seeks to account for problems such as memories, dreams, and commonalities between the experiences of individuals. Doing so in the first instance by conducting a critique of Protagoras, Plato is led to the conclusion that "one gets an impossible result if one

says knowledge and perception are the same" (37): a person can see something, come to have knowledge of that thing, and then shut their eyes and still have that knowledge even though it is being remembered not perceived (37). As such, Plato states that it must be held that "knowledge is one thing and perception another" (37) and, in so saying, he introduces one of the governing hierarchies of his philosophical project. Perception is not, for Plato, simply distinct from knowledge but it also positioned as being lesser than it, and further from what he understands to be reality. Importantly, too, perception is slighted as a sensuous action, one that pertains only to the empirical world and affects what Plato holds to be the physical, embodied, aspect of a person. The way in which Plato positions this particular understanding of knowledge in critical relation to both the notion of reality and theatre receives greater attention in *Republic*.

Setting out a theory of art, in Book X of *Republic* Plato adumbrates in some detail the exact status that he accords to representation in relation to reality and the function of perception. This theory depends upon a three-tiered model that draws together all of: first, "what is", which, taking Plato's example of a bed, is the "bed-in-itself in nature" and is universal; second, a constructed resemblance of 'what is'; and third, any subsequent resemblance of that resemblance (338). The final category is held to apply specifically to artists, and the Socratic mouthpiece in the dialogue discusses this further with the others with whom he is gathered in the house of Piraeus:

> 'Good,' said I. 'Then you say that the artist's representation stands at third remove from reality?'
>
> 'I do.'
>
> 'So the tragic poet, if his art is representation, is by nature at third remove from the throne of truth; and the same is true of all other representative artists.'
>
> 'So it seems.'

> ‘We are agreed about representation, then. But, tell me, which does the painter try to represent? The thing-itself as it is in nature or the things the craftsman make?’
>
> ‘The things the craftsman makes.’ (339)

Plato is describing art, here, as the end result of a qualitatively negative descent down from the highest level of reality: that of the Forms. Art is informed by perception, and perception cannot pertain to the realm of Forms. Plato’s argument in this regard is problematised, however, both by the fact that he takes his conception of reality as a starting point and also by the unchallenged assumption that artists can only ever take perceived appearances as their object, and not the ‘thing in itself’. These issues can, though, be unravelled critically through consideration of the allegory of the cave, in which Plato most extensively discusses his proposed hierarchy and does so, as Elinor Fuchs notes, by describing an “ascending progress” through ontological levels (‘Clown Shows: Anti-Theatricalist Theatricalism’ 40).

The first level in the allegory is the cave itself. In Plato’s imagined cave, prisoners are bound by chains in such a way that they can only see before them and stare at a featureless wall. The cave has both “a long entrance open to the daylight and as wide as the cave” (241), and a fire that burns behind and above the prisoners. This arrangement enables a situation wherein the prisoners’ understanding of reality is determined in a particularly theatrical manner. Between the fire and the prisoners runs a road, “in front of which a curtain-wall has been built, like the screen at puppet shows between the operators and their audience, above which they show their puppets” (241). As in those puppets shows, Plato’s cave also features men moving behind the curtain carrying figures that project above it and that, accordingly cast shadows upon the wall (241). The prisoners would, Plato argues, never see anything “except the shadows thrown by the fire on the wall of the cave” and would accordingly assume these shadows were “the real

things" (241). With this emphasis on the shadowy and perceptual quality of the prisoners' understanding of reality, Plato is pointedly not using theatrical imagery with an intention of endowing it with any positive connotations. Indeed, it should also be noted that whilst Plato evokes puppet shows, and describes the cave as being a performance space, his critique is not so much on theatre itself as it is on theatricality more generally; the cave, as Paavolainen notes, is, at least on one level, not "the normative theatre of Plato's time" (54). David Wiles suggests that the inspiration for this part of the allegory may have sprung from the Eleusinian Mysteries, ritual initiation ceremonies performed during the night in the town of Eleusis near Athens (210); regardless of the exact origins of the image, however, of primary importance here is the fact that Plato uses it to outline a level of reality that is constructed through theatrical means and observed as a staged spectacle (Weber 5).

The significance of this only increases as Plato, in making his argument, moves upward through the hierarchy that he establishes in his allegory. Whilst the prisoners take the cave as their starting position in life, and understand their shadow show to be, as Weber astutely notes, "self-contained" (5), Plato contends that it is possible for the bonds to be broken and for a prisoner to turn away from the wall. As the prisoner moves out of the cave the experience would at first be confusing and even the light of the fire overly dazzling: they might, Plato argues, at first insist that "what [they] used to see was far truer" than the objects that they now perceive behind the curtain (241). The prisoner must therefore proceed in stages, accustoming themselves to the qualities of each new level before moving on to the next: it is at first "easiest to look at shadows . . . and later at the objects themselves"; only after this are they adequately prepared to leave the cave itself (241). The outside world, in the allegory, is the realm of Forms and is illuminated by

the sun (241-242). As such, this level of reality above the cave is understood by Plato to be fundamentally utopian, in the strict sense of the word as a no-place: unlike the cave beneath it, the outside world is ostensibly without spatial, or physical, characteristics. The fire in the cave is a phenomenally experienced light whereas the sun is used here, and throughout *Republic* to metaphorically denote "the form of the good" (234): its light, functionally, if also abstractly, speaking, is the light of reason. It is this journey out of the cave that, for Plato, constitutes the aim of philosophy; the allegory in this regard also clearly aims to further diminish theatricality in the context of the old quarrel: the prisoners only remain trapped in the cave because they are "destitute of philosophy" (Russell 126).

Theatricality, as Plato depicts it, perpetuates a state of self-delusion because although he includes shackles in his allegory it is, in fact, the prisoners' total contentment with the perceptual reality of the shadows that more effectively traps them within the cave. There is, Plato suggests, "probably a certain amount of honour and glory to be won among the prisoners, and prizes for keensightedness for those best able to remember the order of sequence among the passing shadows" (243); in short, if it is all that a person has known then the play of shadows appears, in most cases, as unproblematic. The task of the philosopher, though, as one who first realises the full nature of the cave's dimensions and ventures outside, is to return inside and work to educate those prisoners that remain there (246-247). There are, then, two issues pertaining to theatricality and the world picture in Platonism that need to be addressed here: first is the full implication of this *ascent* from theatrical reality to the reality of Forms, which has been now been outlined; second, and relatedly, is the consequence that that has on the interpretation of the notion of theatrocracy.

Positioning theatricality as being the determinative quality of the first level of human ontological awareness is, as has already been hinted, a problematic decision within the broader context of Plato's philosophy. On the one hand, it allows for an effective, and schematic, expression of the low status of anything mimetic and of the superiority of philosophy in contrast to that; on the other hand, however, it also emphasises the way in which that theatricality, although loathed by Plato, nevertheless obtains fundamentally within his philosophical system. Whilst Plato argues for the existential primacy of the Forms he also implies that they can only be reasonably understood through reference to the shadows of the cave: a prisoner can believe themselves to have escaped the cave, and can recognise the nature of that prison, but their thinking cannot be fully emancipated from the fundamental modality of the cave – theatricality. The highest level of reality for Plato is one that is eternal and qualitatively distinct from the material world of the senses and his philosophical ambition in this regard is essentially frustrated by the fact that that ideal reality can only be conceived of through the metaphorical co-option of ideas such as perception, spectatorship, form, light. There is a connection here to the problems involved in Planck's development of his notion of the world picture: that of how to arrive at a non-anthropomorphized account of reality when human knowledge finds its ultimate basis in the senses.

Indeed, although anachronous as a term in this context, the concept of the world picture as has been outlined thus far relates strongly to Plato's argument and also highlights the double-bind that is central within it. Most immediately striking in this regard is Plato's explicit contention in the allegory of the cave that the empirical world of the senses is, at best, only a copy of a more ideal, and immutable, reality: quite literally, that the perceivable world must be construed as a theatrical representation. In this regard, Plato's position appears as somewhat contrary to

that of Planck, however, as has been argued throughout this chapter, the opposite is in fact equally the case. Like Planck, Plato was driven by the desire to derive constants, or universals, from the variety of experience and, in these terms, his theory of Forms functions in precisely the same manner as Planck's unified world picture: as a representation of something that cannot be directly perceived. As he does not acknowledge this contradiction in his model, naturally Plato provides no attempt at a resolution to the problem. However, the permeation of theatricality throughout the allegory of the cave, and indeed Fuchs goes so far as to suggest that it has a "central drama" ('Clown Shows' 40), ensures that it must be taken as constitutive of *any* world picture. Borrowing Plato's own terminology, theatricality in that sense might be understood as being, itself, a Form of similar, if not greater, status within his model than that which is accorded the 'sun'.

Such an interpretation of theatricality has significant repercussions upon the notion of theatrocracy that is also the subject of critique in Plato's allegory. As Weber notes, the cave cannot be considered solely as a natural setting as, on at least one level, it also "conflates nature and culture" (5). Beyond such a view being necessitated by the fact that the space of the cave has both "chthonic" and "fabricated" qualities (5), though, the situation of the prisoners must also be acknowledged to have a civic dimension. Central to Plato's idea of theatrocracy, alluded to earlier in this chapter, is the conception of society as an audience held captive by theatre (Peter Meineck 1-2) and so, within the framework of *Republic*, the allegory of the cave effectively proposes philosophical governance as being the means to counteract that. At this point, however, Plato's own apparent rhetorical intent must be viewed with a degree of cynicism: theatrocracy does not adequately describe the full significance of 'theatre' to the situation that he outlines. This is not to deny that theatrocracy is an evident concern but, instead, to argue that what

Plato more fundamentally establishes in his allegory is not the idea of governance by theatre but of existence as theatrical.

Understanding theatricality within Plato's thought to be, tacitly, the means by which his proto-world picture can be conceived has great significance in looking ahead to the Modernist period, for playwrights and theatre makers in particular, but also for physicists. The allegory of the cave is in many ways the most visible root of that which Jonas Barish coined, in his landmark 1981 study of the same name, the "antitheatrical prejudice" (5): the negativity towards the theatre that has permeated Western thought since Plato. Significantly, though, much of this prejudice, or even the occasional attempt to counter it, has been couched primarily in the notion of theatrocracy; indeed, in calling for a revision of some of Barish's arguments, Alan Ackerman and Martin Puchner have noted that *The Antitheatrical Prejudice* is itself an "unmistakably post-war American work" that associates theatricality with freedom and "possibilities of self-determination" (3). Again, the importance of this political dimension to the debate is not to be denied here, and, certainly it is of notable importance to Brecht's theatre. The argument that is to be made in this thesis, though, is that it is the idea of theatricality as the fundamental means through which reality can be conceived that becomes more significant in Modernist discourses in the twentieth century: the potential for politically engaged theatre was important, but that potential needs to be understood within the context of a broader debate, one that also includes science.

Plato's allegory of the cave is, then, critically useful in a number of ways. It evidences, first, the theatrical origin and character of the notion of the world picture, and it does so whilst also establishing the foundations of Western philosophy and science. In being rhetorically utilised by Plato to ostensibly inveigh against theatricality, the allegory also, however, undeniably introduces a hierarchy that is

both epistemological and ontological in nature, wherein anything pertaining to the theatre is positioned at the bottom. This negative stance towards theatricality did indeed lead to the long durée of the anti-theatrical prejudice in the West but, given the actual positioning of theatricality within Platonism, it is also important to consider the parallel school of thought that developed coterminously and that was grounded in the other agonist of the 'old quarrel'. As has been seen, in the allegory of the cave Plato's proposed alternative to theatre in all respects is the ascendance of philosophy, characterised by the "liberating if painful" transition from world of shadows into the light of the sun (Weber 7-8). That development also effectively marked, however, as Paul Feyerabend critically outlines in *The Tyranny of Science*, the first formulation of the idea that it is science that has the most justified claim to "deal with . . . all there is" (6). As a counter to theatricality and the fear of theatrocracy, the so-called tyranny of science has many issues, the roots of which have been outlined in this section and which were particularly realised in the twentieth century. In order to move forward in working to further address those issues, it is necessary to now aspects of Platonism were both refuted and consolidated in the work of his student, Aristotle.

4.0 Physics and poetics: Aristotle

Standing alongside Plato as one of the most influential figures within Western thought and culture, Aristotle was, in the eyes of many such as Russell, followed by no rival of equal philosophical stature for almost two millennia (157). Regardless of the unequivocal boldness of Russell's general claim, there is no doubt about the fact that Aristotelianism had a profound and lasting impact throughout many different fields. The significance of Aristotle's work within the context of this chapter is found, more specifically, in its critical dialogue with Platonism on the main issues

that have been examined so far: the position of theatricality and the role of theatre; the question of representation; and the methodology and the object of science. Having established that the notion of the world picture that became increasingly prominent in Modernist debate finds perhaps its first critical formulation in Plato's writing, this chapter now works to outline how that conceptualisation was further consolidated within the fabric of subsequent Western thought by Aristotle.

The first thing to note, in framing this particular analysis, is that, at least in terms of what they themselves claim, Plato and Aristotle stand on different sides of a key methodological divide: whilst Plato advocates a form of philosophical idealism and criticises the value of the senses, Aristotle expounds an early form of empiricism in which the role of perception is more important to the generation of knowledge (Jean de Groot 1). In Popperian terms, introduced earlier in this chapter, the difference between Platonism and Aristotelianism in this regard also marks a shift from methodological essentialism to methodological nominalism. Aristotle was interested, to a greater degree than Plato was, in the questions concerning *how* things existed and behaved, both in nature and society; it largely as a result of this, Whitehead contends, that Aristotelianism is the system of ancient thought that most fully "attained to the complete scientific mentality" (*Science and the Modern World* 8). This similarity is perhaps most clearly evidenced in *Physics*, a work that stands as being, in many ways, the first attempt to establish a structured approach for the study of a "nature" that Aristotle held to comprise of "form" and "matter" (37). It is a "natural scientist's job", Aristotle argues in *Physics*, "to understand both kinds of nature" (37) although there is greater emphasis placed upon the latter. A natural scientist needs to have just enough knowledge about "form and what a thing is . . . as a doctor has about sinews . . . which is to say as much as it takes to know what the purpose of a given thing is" (38). Central to the system that Aristotle developed

in this regard is the same issue that was so problematic for Plato: change. Aristotle argues that “nature is a principle of change, so if we do not understand the process of change, we will not understand nature either” (56); as such, the question of change is addressed in over half of the major sections, or ‘books’, of *Physics*.

This notion of change also serves to introduce the other key reason as to why Aristotle is of significance to the argument being made in this chapter: his theory concerning theatre, both in its own right and as a response against Plato’s anti-theatricalism. Unlike Plato, Aristotle did not hold theatre to be a dangerous distraction antithetical to both the aim of philosophy and the concept of an ideal state; and indeed, as Martin Revermann states, he can justifiably be seen “both as a theoretician of theatre *and* as a scientist” (216). Common to Aristotle’s writing in both of those guises is a consideration of the notions of structure and process, or change; moreover, as is also observed by van Fraassen, there is a “remarkable parallel in his [Aristotle’s] views on drama and on physics” in that regard (265). The word ‘parallel’ is important here, however, as whilst there are similarities between the ideas expressed in *Physics* and *Poetics* Aristotle nonetheless accords to physics and to theatre markedly distinct scopes. Whereas physics, within the Aristotelian system, takes nature as its object, drama is instead positioned in relation to human actions and specifically understood to be, as Lehmann highlights, the mimesis of those actions (*Postdramatic Theatre* 36).

Aristotle’s theory of the theatre in those terms is in many ways just as problematic as Plato’s, and perhaps more so in certain key respects. The reason for this being that although *Poetics* presents itself as defence of mimesis against the charges Plato levels against it (Puchner, *Stage Fright* 23), Aristotle effectively does so by more concretely severing its connection to the idea of truth. This difference maps broadly onto the distinction that Badiou draws between “didactic”

and “classical” approaches to art by philosophy, in a range that also includes “romantic” (‘Theatre and Philosophy’ 97). The didactic approach, exemplified by Plato, holds truth to be external to art but believes that art nevertheless makes claims to truth and that it is, therefore, problematic (97). By contrast, the classical approach, exemplified by Aristotle, still maintains truth to be external to art but it suggests that this is acceptable because “theatrical art by no means aims at the truth” (98). Of the two philosophers, Aristotle demonises the theatre to a lesser extent and provides it with a form of societal justification, but he does so by more effectively removing the issue of theatricality from within his epistemological model. Whilst Plato inveighed more openly against the theatre, it is precisely because he viewed theatricality on the same terms as philosophy, as rivals in the ‘old quarrel’, that it ultimately maintained a visible presence and potential within his thought. Viewing the human experience of the material world as being, in the first instance, theatrical, Plato inadvertently accords theatricality a critical importance within the formation of his philosophical world picture. Aristotle, on the other hand, establishes an early form of natural science as being the primary lens through which to conceive of nature: ‘physics’ itself being etymologically rooted in the Greek word for nature, *physis*.

The significance, here, of the difference between Aristotle as the early scientist-philosopher and Plato, as viewed positively by Heisenberg as a being “of course, a poet” (qtd in Blackmore, *Ernst Mach* 315), is that it marks the apparent loss of theatre’s autonomy. The parallels between *Physics* and *Poetics* noted by van Fraassen take the former as their initial reference point: the notion of processes concerning human actions is determined, within the Aristotelian system, by the ideas and methodology of physics; theatre can have a place in society but it functions as a detached therapeutic accompaniment to the inquiry into knowledge

conducted by philosophy and science (Badiou, 'Theatre and Philosophy' 98). As a result of that, Aristotle's conceptualisation of the theatre establishes it as being something that is, in important respects, less critically determined by an acknowledged theatricality; instead, as Lehmann notes, his focus is on the logical structure and order of drama (*Postdramatic Theatre* 40). That is a complex claim but, when further examined, it provides a useful means by which to fully establish the foundations of the Modernist dialogue between theatricality, physics, and philosophy.

In speaking of Aristotelian theatre as being less theatrical, however, it must be emphasised that it is not being implied that Aristotle took no interest in the experiential qualities of the theatre. As Puchner observes, there is a degree of compromise in Aristotle's approach wherein he both feels that "drama should be able to do without acting altogether" whilst also seeking to "defend, at least to some extent, the spectacular and visual aspects of the theater" (*Stage Fright* 25). The way in which that stance is expressed in *Poetics* does, however, despite first appearances, very much minimise the importance of the embodied, theatrical, aspects of theatrical experience. Initially, there is Aristotle's definition of tragedy as

> an imitation of an action that is admirable, complete and possesses magnitude; in language made pleasurable . . . ; performed by actors, not through narration; effecting through pity and fear the purification of such emotions. (10)

In that statement, Aristotle both introduces his particular understanding of mimesis as obtaining within theatre as the 'imitation of an action' and also, crucially, relates that to performance and emotional affect. This is, however, almost immediately problematised, particularly in regard to the idea of the theatrical event, when Aristotle sets out what he identifies to be the six component parts of every drama: "spectacle, character, plot, diction, song and reasoning" (11). The presence of spectacle at the head of that list is deceptive; indeed, Aristotle provides an explicit

ranking and, whilst plot is accorded primacy as “the source . . . of tragedy” (12), spectacle is positioned last, being “attractive” but also the “least germane” of the components of drama (13). The effect of tragedy, Aristotle proceeds to argue from that point, “is not dependent on performance and actors” (13) and so, the fact that drama takes place in the space of the theatre is taken to be largely incidental.

To draw Aristotle’s theory more closely into the greater context of the chapter, the issue to be returned to finally, at this point, is that of the manner in which it stands in conjunction with Platonism as one of the two major foundations for Western thinking about art, philosophy and science. Indeed, it is to be argued that it is only by considering Aristotle and Plato in dialogue with one another that subsequent historical debates about theatricality and representation, in the context of both theatre and science, can be fully understood. Being both one of the first major philosophers to positively engage with theatre and also arguably the last to do so until the eighteenth century (Julian Young 41), there can be no doubt about the extent to which Aristotle’s conceptualisation of drama has proved influential. Indeed, as Antony Tatlow states, the ideas set out in *Poetics* have proved so pervasive that in the West poetics are still, to a certain extent, “governed by mimesis, derived from as well as constituting the genre of drama and formulated by Aristotle” (*Shakespeare, Brecht, and the Intercultural Sign* 36). Significantly, however, the Modernist period increasingly saw this Aristotelianism brought into consideration not as something to be adopted but, instead, as a theory to be actively critiqued whilst Platonism enjoyed a certain critical, if contentious, resurgence within thought and praxis (Puchner, *Stage Fright* 25; Taxidou, *Modernism and Performance* 72). As such, any idea of a one-directional movement from Platonic anti-theatricalism to Aristotle’s subsequent defence of mimesis needs

to be challenged: neither philosopher can, in retrospect, be seen to have entirely achieved their intended goal.

The relationship between Aristotelianism and Platonism, in terms of their conceptualisation of the key issues outlined in this chapter, is characterised by contradictions across multiple levels, both in terms of their own writing and in their reception by others. Plato inveighs against the theatre and inaugurates the anti-theatrical prejudice within philosophy whilst simultaneously also establishing the idea of a reality that can only be conceived of in theatrical terms; Aristotle justifies theatre within society and defends mimesis but, in doing so, fundamentally delimits theatricality to being merely an incidental spectacle to be managed within theatre (*Poetics* 10). Similarly, in his advocating of rational idealism, Plato maintains theatricality as being definitive of physical interactions and so it remains as a visible potentiality within his thought; Aristotle, on the other hand, proposes an empiricist philosophy and introduces physics as the primary means for thinking about the perceivable world. Accordingly, although it was Plato who was the most outspoken critic of theatre it was Aristotle who more effectively consolidated theatricality's status as supposedly epistemologically and ontologically subordinate to philosophy and science. As Aristotle's philosophy stands, however, in immediate dialogue with that of Plato, the critical theatricality that determines the model established in the allegory of the cave also maintains a presence in the Aristotelian system, albeit in latent or potential form.

Taken together in that way, the writings of Aristotle and Plato can indeed be seen to mark, as Heidegger contends, both a crucial turn towards the notion of rationalist philosophy and science as being the means by which nature could be understood ('Science and Reflection' 157) as well as the formation of "those basic concepts . . . which mark off the boundaries for all future inquiry into art" (*Nietzsche*

1: 80). What Heidegger highlights is, effectively, a deepening and a consolidation of that ‘old quarrel’, or ‘ancient antagonism’, identified by Plato: whilst the epistemological rise of philosophy and science continued, theatre, and art in general, were positioned as subordinate in that regard and distinct in terms of scope. No longer viewed as also being concerned with questions of truth, theatre was instead positioned as an object for philosophy. It is for this reason that Plato and Aristotle together serve a dual purpose in this analysis: they both establish the original precedent for bringing theatricality into discourse with philosophy and science; they also, however, introduce the idea of a fundamental difference obtaining between mimesis and reason, art and science.

It is precisely that intellectual tradition and hierarchical distinction between art and science that Nietzsche, writing almost two thousand years later, reacts against in *The Birth of Tragedy*. Accordingly, it is towards a consideration of Nietzsche’s early work that the argument in this chapter now moves. Whilst it is to be acknowledged that *The Birth of Tragedy*, as Nietzsche’s first major scholarly study, presents problems in terms of his rhetorical approach at certain points (Adrian Del Caro 57), the analysis that he conducts of the relationship between science, theatre, and nature is of significant interest. Having thus far examined the concept of the world picture, the function of theatricality in its formation, and the original closeness of science and art in terms of their being the unseen foundations for the discussion that opened this chapter, an analysis of Nietzsche provides an insight into the manner in which those ideas and tensions became more visible, more active.

5.0 *The Birth of Tragedy* and "the problem of science"

First published in 1872, and later revised in 1886, *The Birth of Tragedy* established Nietzsche as a relative latecomer to the debate about tragedy that was ongoing in German philosophy at that time (Miriam Leonard 62). It also, however, marked a significant development in thinking about theatricality. Nietzsche wrote *The Birth of Tragedy* as a philologist and philosopher, but in setting out his argument he also, as Lehmann notes, "thinks *from the standpoint of theatre*" and engages deeply with the questions of theatricality's potential (*Tragedy and Dramatic Theatre* 34). It is due to that same reason that Ackerman and Puchner are able to claim that in the wake of Nietzsche there is a traceable development of what they refer to as a "theatrical philosophy" that reinvigorates the complex relationship existing between both elements (14). Whilst it must be acknowledged that Nietzsche's own language concerning the theatre varied wildly over the course of his career, especially in his later references both to theatrocracy as "the craziness of a belief in the pre-eminence of the theatre" (*The Case of Wagner* 38) and to theatre as being a narcotic (*The Gay Science* 142), the central argument expressed in *The Birth of Tragedy* remains of great pertinence. Indeed, even beyond the fact that this study does not aim for a critical assessment of Nietzschean philosophy, it might well be noted that, in line with the idea that anti-theatricalism is typically a reaction against a particular form of theatre (Ackerman and Puchner 12-13), much of Nietzsche's overtly expressed hostility in that regard is pointedly directed toward Wagner and the theatre of the time.

In light of that, making *The Birth of Tragedy* of particular significance to this chapter is the fact that the question of science is also central to the argument that Nietzsche expounds. This is highlighted by Nietzsche himself in the essay 'Attempt at a Self-Criticism' that prefaced the second edition of the work. In that essay,

Nietzsche retrospectively announces the issue that underpins *The Birth of Tragedy*: "What I began to grapple with at that time was something fearful and dangerous, a problem with horns, . . . a *new* problem: today I would call it the *problem of science* itself – science grasped for the first time as problematic, as questionable" (4). Science as it is used here, it should be noted, is not natural science in the stricter sense but rather that which in German is denoted by *Wissenschaft*: essentially, knowledge arrived at through rationalist methodologies. As has been outlined earlier, however, the two meanings are closely and importantly connected; in proposing the idea of science as both 'questionable' and a 'problem', Nietzsche effectively moves against the Aristotelian and Platonist position. Equally, although Nietzsche notes the influence of German Romanticism upon *The Birth of Tragedy* (5) it is to be argued here that his approach differs slightly, but notably, from Badiou's definition of the "romantic" form of philosophical seizure of art: the view that "art alone is capable of concrete truth" ('Theatre and Philosophy' 98). Instead, Nietzsche raised the status of art by holding it in critical dialogue with science; the "audacious task" that his first work begins to undertake is that of "*viewing science through the optic of the artist, and art through the optic of life*" (5).

The oft-noted relationship that Nietzsche posits to exist between the Dionysian and the Apollonian in Greek tragedy serves him also as an initial frame for his engagement with the problem of science. For Nietzsche, the concept of the Dionysian denotes a principle of pre-rational formless disorder and is "the real hero" of the tragic stage (*The Birth of Tragedy* 52) whilst the Apollonian is compared to the clarity of dreams and held to be that which provides the Dionysian with an "objective form" (52). Nietzsche's understanding of the Dionysian, which also holds it to be rooted in of ritualistic "rapture" or intoxication wherein the individual unity collapses (22), has proved perhaps the most conceptually influential

of the two in terms of Modernist theatre directly. This was particularly so for Antonin Artaud who envisioned his Theatre of Cruelty as one in which there was an experience of a return to a "kind of ancient Natural Philosophy, from which the mind has never been separated" (42). Significantly, though, Nietzsche is not arguing for a simple return to an earlier state of being; instead, he is interested in the idea of the Dionysian as a future problem for science, the latter taken as exemplifying the Apollonian drive for order.

The concept of what might be termed 'beyondness' that Nietzsche introduces through his consideration of the Dionysian as something that is beyond form, beyond reason, is pivotal to his critique of science and its progress. Science, as Nietzsche understands it in *The Birth of Tragedy*, is governed by both the belief that it can explain "that which exists" (81) and, also, "profound *delusion* . . . that, by following the guiding thread of causality, thought reaches into the deepest abysses of being" (82). This approach to nature is the defining quality of what Nietzsche terms "the theoretical man" who stands in opposition to "the artist" (81). The use of the label 'theoretical' in this context, particularly insofar as it is related to the issue of the "unveiling of the truth" (81) is significant in terms of both science and theatre, but it becomes more fully integrated into the debate by Heidegger, as will be further analysed in the next section. For Nietzsche himself, it is essentially the collision of science and beyondness that provides the central mechanism of his argument; in what is to be viewed here as one of the key passages of *The Birth of Tragedy*, science is held as integral to the arousal of 'tragic knowledge':

> But now science, spurred on by its powerful delusion, hurtles inexorably towards its limits where the optimism hidden in the essence of logic founders. For the periphery of the circle of science has an infinite number of points and while there is no telling yet how the circle could ever be fully surveyed, the noble and gifted man, before he has reached the middle of his life, still inevitably encounters such peripheral limit points and finds himself staring into an impenetrable darkness. If he at that moment sees to his horror how at these limits logic coils around itself and finally bites its own tail – then the new

> form of knowledge breaks through, *tragic knowledge*, which in order to be tolerated, needs art as a protection and remedy. (84)

This striking image of the "circle of science", uncertain of its own exact measurement and surrounded by an 'impenetrable darkness' beyond, presents two levels of critique: first, more generally, of the overall epistemological ambitions of science; second, more specifically, of the idea of "disembodied" reason and logic (Del Caro 70). Rooted in the philosophy of Socrates, Plato, and Aristotle, science is presented by Nietzsche as both seeking to expand and, in doing so, to distance itself from its phenomenal origins in sense-perceptions. The optimism that it has in this regard, however, is argued by Nietzsche to be ill-founded: the circle does not mark the progress of scientific knowledge but describes, instead, the limited area within which that advance is possible. The circle, with its infinite symmetries and every possible point on the circumference equidistant from the centre, is particularly effective in enforcing Nietzsche's notion of the perfect totality of science's delusionary aims, as well as the inverse: the fundamental inescapability of its limits. No matter in what direction scientific knowledge is pursued, Nietzsche argues, the outcome is the same: either it will fall short even before reaching the limits to which it is 'inexorably' drawn, or else it will reach one such 'limit point' upon the circumference and realise that it really can go no further, the methodology of logic coiling back upon itself instead.

The fundamental schematic that Nietzsche depicts when he writes of the circle of science in this manner is not, however, entirely original and has appeared at an earlier point in this chapter: Plato's allegory of the cave. Although aspects of their respective topologies differ, what Nietzsche establishes at that point in *The Birth of Tragedy* is effectively a form of critical inversion, if not perversion, of Plato's allegory approached from the opposite position: the theatrical cave becomes the circle of science and loses its openness; the dazzling radiance of the sun is

replaced by an equally blinding darkness. That Nietzsche might be seen to critique Plato in this way is both significant if not entirely surprising given that, as David Krell has noted, much of Nietzsche's writing pointedly aims to overturn Platonism (45). The full scope of Nietzsche's proclaimed anti-Platonism is beyond the purview of this chapter but in his relatively synoptic *Twilight of the Idols* he claims that his "distrust of Plato runs deep" (77) and that he holds him to be "a coward in the face of reality" who therefore "takes flight into the ideal" (78). There is an emphasis placed, here, on the idea that Nietzsche's stance was to an extent only ostensible because, following James Porter's suggestion that *The Birth of Tragedy* in fact provides a particularly "*Platonic* interpretation of the Dionysian" (95), wherein the Dionysian is figured as Form, the exact relationship between the two philosophers is not so clear. To both consider this further and draw it into critical relation to the understanding of theatricality and science being advanced in this chapter, Nietzsche's description of the peripheral encounter must be returned to.

The idea of science realising its own limits, and logic coiling back on itself, connects strongly with what is often perceived to be a pervasive nihilism within Nietzsche's thinking about philosophy and science in general (Rebecca Bamford 241). It is his comment about the emergence of 'tragic knowledge' at the moment at which those limits are reached that is especially significant in that regard because it is deeply grounded in questions concerning theatricality and human understanding of reality. In the first instance, Nietzsche's account of that emergence must be viewed in certain respects as being a reiteration of his claim that a "sublime metaphysical madness accompanies science as an instinct and leads it again and again to its limits, where it must transform itself into *art*" (*The Birth of Tragedy* 82). If science for Nietzsche is, as Porter contends, "in its essence . . . art" (107) then that basic congruence receives, however, a more complicated qualification through

the idea of art as being ‘protection and remedy’. There is, in that claim, a subtle shift of focus away from the underlying similarities of science and art towards, instead, the dynamics of the relationship between the two.

Art’s stated function in *The Birth of Tragedy*, as a remedy for the symptoms brought about by science’s encounter with its limits, is one that has resonances with the notion of the *pharmakon* that Plato first introduced in *Phaedrus* and that Jacques Derrida notably later analysed in *Dissemination*. In both, the issue is framed by the recounting of a story involving the ancient Egyptian god Theuth’s discussion of writing with the king Thamous; in both, the problem at hand is characterised by the existence of what Derrida terms an “unstable ambivalence” (97). The most obvious form that this ambivalence takes is the functional potential of a *pharmakon* (a medicine, or potion) to act as both a remedy and a poison. In *Phaedrus*, Theuth presents writing in positive terms, claiming that it is a “science [that] will increase the intelligence of the people of Egypt and improve their memories” (68) and “a potion [*pharmakon*] for memory and intelligence” (68); Thamous, however, counters by claiming that the opposite is in fact the case and that writing “will atrophy people’s memories” (69). Viewed in these terms, Nietzsche’s account of the limits of science can assume another level: the so-called ‘break through’ of tragic knowledge ruptures existing epistemological hierarchies between science and art, science and theatre; theatricality, then, provides a means (remedy) for thinking about the problem of beyondness but in doing so simultaneously also undermines science’s original aim.

The scenario that Nietzsche describes when talking about the circle of science must be seen, then, to both function as a pointed critique of the Platonist model of knowledge and reality whilst also displaying a remarkably prescient account of the situation that would develop in the twentieth century. During the Modernist period,

as has been mentioned, the question of fundamental limits to scientific understanding, perhaps most notably expressed in the form of Heisenberg's Uncertainty Principle, was increasingly at the forefront of debate in all of science, art, and philosophy. Whilst it might on one level be Heisenberg's formula that most explicitly introduced that concept, it is more useful at this point in the argument to return to Planck's claim that physical science takes as its goal something that is effectively unreachable because it has "a metaphysical character, and, as such, is always again and again beyond our achievement" (qtd in Holton, 'Mach, Einstein, and the Search for Reality' 189). That idea, as well as Planck's observation that something "irrational . . . or mystic" still obtains within science, was earlier briefly introduced within the context of reaction against the perceived resurgence of positivism in quantum mechanics. Considered again now, in light of Nietzsche's argument in *The Birth of Tragedy*, Planck's statement offers an interesting resonance with the concept of science forced at a certain point to acknowledge certain basic affinities with art.

There is, however, a more complex nexus of concepts, thinkers, and methodologies in active consideration at this point in the chapter; Planck also helps, once again, to bring that set of critical relations into view as this argument moves towards its final stage. First setting out his idea of theoretical physics by establishing the notion of the world picture firmly within the debate concerning physical science at the time, Planck tacitly reinvigorated a Platonic mode of thought and understanding of reality; in doing so, he also abetted the re-entry of physics into the broader arena of Western philosophy and culture. As a result of this, and particularly so given Germany's status as the epicentre of the scientific revolution at the start of the twentieth century, physics is brought into dialogue with schools of thought engaged with similar concerns, one of which being the critique of

metaphysics set out by Nietzsche and continued by Heidegger. Accordingly, Planck's world picture stands in critical tension with not only the Platonist model of the cave but also Nietzsche's proscribed circle of science: all of this grounded the basic question as to what 'reality' is, how it might be understood and/or represented, and how humans stand in relation to it. When Nietzsche outlines in *Twilight of the Idols*, starting with Platonism, the steps by which, he argues, "the 'real world' finally became a fable" (20) it is therefore no coincidence that sections read at times as if they could be rhetorical prompts for Planck's 1908 lecture: "The real world – unattainable? At any rate unattained. And since unattained also *unknown*" reads the fourth point before it concludes with the troublesome "[c]ock-crow of positivism" (20). If, however, there is one term that at this point immediately focuses all of those issues it is arguably that same one that physics opposed for so long: metaphysics.

5.1 Metaphysical bridge: the cave, the circle, the theatre

The question of metaphysics itself is not the focus of this study, and indeed it would be far too expansive a subject to consider, but in this instance a brief consideration of the position it assumes in the philosophical and scientific context outlined provides a useful bridge between Nietzsche and the twentieth-century situation introduced at the start. Equally, whilst the previous section framed the issues at hand in terms of Nietzsche, and whilst his philosophy remains crucial in that respect, to both consolidate that philosophical position and move forward effectively the critical focus must now shift slightly to Heidegger's later interpretation of Nietzsche's thought. Heidegger, as Ernst Behler observes, was one of the first major figures to introduce Nietzsche into serious philosophical consideration (17-18) and, to a notable extent, he assimilates many of the latter's

ideas. Of particular significance in that regard is the fact that Heidegger understood Nietzsche's writing to represent a "completion of Western metaphysics" (Behler 18), especially insofar as it proposes an ultimately unresolvable entanglement of scientific knowledge with a sense of nihilism concerning its own aims (18). This "utterly completed, perfect nihilism" identified by Heidegger in Nietzschean philosophy (*Nietzsche* 4: 203) is also understood to be grounded, as this chapter has also suggested, in a critical reassessment of assumptions made by science about its relation to knowledge that trace back to Plato, "with whose thought metaphysics began" (*Nietzsche* 3: 201). By considering in some further detail the manner in which Heidegger engages with Nietzsche on those issues, this transitional section will emphasise the close and problematic relations between the ideas of Plato's cave, Nietzsche's circle, and the idea of theatre.

It is the complex presence of theatricality within Platonism that is, once again, foundational here. As has been shown, contrary to his attack on theatre and mimesis in favour of reason and formal idealism, Plato's conception of reality is nevertheless critically dependent upon the theatricality that he seeks to suppress in his thought. It is this latent, or hidden, potential for a less hierarchical relation between theatre and science that Nietzsche first exposes in *The Birth of Tragedy* and that physicists such as Planck and Heisenberg also encounter, albeit from the opposite direction. This epistemological and ontological situation is viewed by Heidegger, in his reading of Nietzsche, explicitly in terms of metaphysics and nihilism:

> The essence of nihilism *is* historically as metaphysics, and the metaphysics of Plato is no less nihilist than that of Nietzsche. In the former, the essence of nihilism is merely concealed; in the latter, it comes completely to appearance. (4: 5)

The parallels that that statement suggests between nihilism as metaphysics and the concept of theatricality being considered in this chapter are interesting, but it

also bears reiterating that the two are not being equated: theatricality is not metaphysics per se, nor is it inherently nihilistic. Instead, within the context of science and its aims, the ultimate inescapability of the theatrical nature of our embodied nature and sensory experiences is what allows for nihilism and arguably necessitates metaphysics. When Heidegger speaks of the concealment of metaphysical nihilism in Plato and its exposure in Nietzsche he is also, it follows here, providing an account of the revelation of something else that is different but closely related: the critical function of theatricality in scientific and philosophical thought, as well as in the notion of the world picture.

Considered in those terms, the examined metaphors of Plato's cave and Nietzsche's circle of science present a nihilist account of science and disembodied reason primarily because they evidence (implicitly or explicitly) what is ultimately a critical lack of distinction between theatrical and scientific modes of thinking on a fundamental level. As the crisis that quantum theory effected within physics prompted, or indeed forced, an engagement with metaphysics in that regard, the question now becomes that of how that might be done and what it fundamentally entails. Again, in *Nietzsche*, Heidegger writes tellingly of such an interaction between the two and finds grounds to argue for a form of reconciliation:

> . . . a science may become philosophical as a result of the intrinsic inquisitiveness of the science itself. A science may get caught up in the original attractive power of knowledge by thinking back to its own origins, in such a way that these origins themselves determine every step in the operations of that science. (2: 113)

It is interesting here that Heidegger speaks of science's potential to become philosophical in a manner that clearly echoes Nietzsche's own argument that science, at its limits, becomes art. Indeed, that serves to further illustrate the lineage of the idea outlined in this chapter so far: that modern science may have emerged by taking philosophy as its immediate point of departure but it still shares the same origins, and those origins involve a conception of reality deeply

determined by contested theatricality. As such, twentieth-century physics as an exemplification of a science thinking about its own origins can be seen to have brought not only philosophy into a new position within its self-conception but also, as a result, a revitalised notion of theatricality and theatre.

Having now analysed both the explicit emergence of the world picture concept into physics as well as the long history and development of that idea and its relation to theatricality up until that point, this chapter must return finally to the interaction between Heisenberg and Heidegger that was introduced at the start. Moving from Nietzsche's nineteenth-century reflections on 'the problem of science' to the debate as it existed in the wake of the formulation of quantum mechanics, the last task of this chapter is twofold: to examine the new congruencies or differences between physics and philosophy in the twentieth century; to show the particular significance that those had for theatricality, and Modernist theatre, and vice versa. In order to do so, the critical dialogue that took place between the two major thinkers at the Munich symposium in 1953 will be analysed in more depth, with both Heisenberg and Heidegger seen to be engaging not only with each other but also with particular understandings of the world picture. The focus so far has been largely upon establishing the fact that, despite not receiving much explicit mention, art was indeed central to the debate; now, building from that, attention is to be paid to what each thinker, but especially Heidegger at this point, has to say about science.

6.0 Munich 1953 revisited: *Theatricality* in the Technological Age

The encounter between Heisenberg and Heidegger was not a confrontational one, in the sense that there was no outright antagonism; equally, however, neither was it a display of physics and philosophy coming together to form a truly united front. In the post-war period, Heidegger came increasingly to view the natural sciences as

paradigmatic of Nietzsche's more general 'science' (Carson, 'Science as Instrumental Reason' 490) and to consider Heisenberg as the contemporary exemplification of the figure of 'the scientist' (492): it was pointedly as such a figure that Heisenberg was invited to Munich. As his readings of Nietzsche show, and Trish Glazebrook emphasises, the question of science was "ubiquitously peripheral and regularly central" to Heidegger's philosophy from a much earlier point in his career (4) and he contrived the Munich symposium as being, to a certain extent, a means by which to consolidate his own ideas. That is not to say that Heidegger had no interest in actual dialogue with physicists, indeed, the notion that philosophy should be engaged in discussion with scientists was, as Otto Pöggeler notes, central to the essay 'Science and Reflection' (24). Instead, following Carson's suggestion that at Munich "even if Heisenberg's own thinking was not crystal-clear, it would appear that Heidegger had his conclusion before he quite had the reasoning to support it" (496), it is to be argued that the philosopher had attempted to pre-emptively determine the particular dynamic of the discussion.

Almost twenty years earlier, Einstein had observed that "[i]t has often been said, and not without some justification, that the man of science is a poor philosopher" ('Physics and Reality' 290) and in many ways Heidegger's Munich lecture and essay are grounded in an exaggerated version of that position. Heidegger, despite having earlier argued in *Nietzsche* that a science could become philosophical, chooses to effectively preclude the possibility of philosophical reflection by a scientist regardless, also, of the fact that that was what Heisenberg delivered in his lecture, broadly speaking (Carson, 'Science as Instrumental Reason' 496). There are a variety of reasons as to exactly why that was the case but most of those are only of tangential relevance to the purview of this argument. Of importance in that regard here, though, is the fact that in his viewing of Heisenberg as the

paradigmatic *scientist* Heidegger also problematically accords him guiding principles that are, strictly speaking, more those of pre-1900 science; his opinion, as Pöggeler notes, was that Heisenberg's quantum mechanics was "driven by the tendency to absolutize and base science as the theory of reality on itself alone" (25). This was partly due to a degree of misunderstanding as to the exact situation within physics at the time but also because of the incredibly close association that Heidegger posits to exist between science and technology. Directing his criticism "against the very core of the scientific endeavour, which he sees as being fundamentally related to a single aim, the domination of nature" (Prigogine and Stengers 32), Heidegger sees modern physical theory as being the "essence" of technology ('The Question Concerning Technology' 22) and effectively conflates the great contemporary success of that technology with the idea that science's conception of itself has not been shaken.

Despite the issues that might be found, from a more scientific perspective, with the character of the dialogue that Heidegger aimed to establish, the Munich lectures do nevertheless work to highlight a particular element of debate surrounding the concept of the world picture: the positioning of people within it. This has not been entirely absent from the previous discussion, underpinning both Planck's anti-anthropomorphism and the shadow theatre of Plato's cave, but it has not been considered in depth; what Heidegger usefully provides is a sustained critique of science and the world picture that centres around the fundamental issue of people being observers within conceptions of reality. That question is to assume increasing importance as this thesis moves, particularly in subsequent chapters, toward a more sustained focus on examples of Modernist theatre, but it also provides in this instance an introduction to one of the key points of disagreement between Heisenberg and Heidegger. Whilst there are various similarities between

the arguments that the two men expound, Heidegger appears particularly anxious to emphasise one specific difference that he supposes to exist; this can be clearly evidenced by direct comparison of two passages taken from their respective lectures.

In ‘The Representation of Nature’, Heisenberg at one point posits the following about the relationship between people and nature:

> The statement that in our time man confronts only himself is valid in the age of technology in a still wider sense. In earlier epochs man saw himself opposite nature. Nature, in which dwelt all sorts of living being, was a realm existing according to its own laws, and into which man somehow had to fit himself. We, on the other hand, live in a world so completely transformed by man that, whether we are using the machines of our daily life, taking food prepared by machines, or striding through landscapes transformed by man, we invariably encounter structures created by man so that in a sense we meet only ourselves. (104)

Heidegger, in ‘The Question Concerning Technology’, can be seen to effectively paraphrase that argument but with a different final claim:

> Meanwhile man, precisely as the one so threatened, exalts himself to the posture of lord of the earth. In this way the impression comes to prevail that everything man encounters exists only insofar as it is his construct. This illusion gives rise to one final delusion: It seems as though man everywhere and always encounters only himself. Heisenberg has with complete correctness pointed out that the real must present itself to contemporary man in this way. *In truth, however, precisely nowhere does man today any longer encounter himself, i.e., his essence*. (27)

So, whilst Heisenberg suggests, here, perpetual self-encounter to determine our experience of nature, Heidegger appears to derive the opposite conclusion from the same point. The situation, however, is more complex than Heidegger would have it appear and, to establish why, there are two issues that must be addressed. First of those is the fact that Heidegger is attempting to dispute Heisenberg by critiquing a point taken out of the broader context of the latter’s argument. Despite Heisenberg indicating that, at that moment, he is speaking primarily in terms of the ‘wider sense’, Heidegger disputes him on the fundamental level. In doing so, he effectively ignores the crucial earlier consideration in ‘The Representation of

Nature' of the specific problems that are both faced and posed by quantum mechanics. Heisenberg's argument, crucially, does not take everyday experience as its starting point and, instead, he begins by outlining the basic presumption of classical science that is contemporary atomic physics had overturned: that "for the smallest building blocks of matter . . . it turns out we can no longer talk about the behaviour of the particle apart from the process of observation" (99). This is kind of encounter is, as Heisenberg himself makes clear, is not a practical consideration beyond atomic research (99), and so is not what governs the claim that Heidegger elects to directly respond to; it is, however, both the cornerstone of the quantum mechanical understanding of reality and also, as Bohr had earlier noted, "an epistemological problem quite new in natural philosophy" ('Natural Philosophy and Human Cultures' 25). In his Munich lecture, Heisenberg therefore presents a much deeper account of our relationship to nature than Heidegger explicitly acknowledges: it is not simply a question of encountering manmade structures but, rather, the newly complicated idea that "science always presupposes man" (100).

The second main issue concerning Heidegger's response to Heisenberg follows on from the first, but is more deeply rooted in his own thinking about science and complicated through his use of specific terminology. Not only does he effectively take the wrong aspect of Heisenberg's argument as being the most significant but, in doing so, he misses the opportunity to more usefully integrate physics into the thesis that he sets out. Much of this problem hinges around Heidegger's preoccupation with the idea that, as he himself emphasised, people no longer encounter themselves or 'their essence'. It is not to be argued, here, that there is congruence between this aspect of Heidegger's philosophy and quantum mechanics, indeed the opposite might more accurately be held to be the case, but rather that the issue central to both in that regard is to a large extent the same:

'seeing' as a critical act. This is also to be held as being of great importance to twentieth-century re-conceptualisations of theatricality however, before that can be considered, a brief examination of Heidegger's own understanding of the world picture concept needs to be undertaken.

6.1 Heidegger, modern science, and the world picture

In 1938, almost exactly three decades after Planck had presented his Leiden lecture on the unity of the physical world picture, Heidegger offered his own formulation of the concept in a lecture later published as the essay 'The Age of the World Picture'. A far-reaching critique of the idea of objectification (Alfred Tauber 6), Heidegger's essay provides an intriguing conceptual counterpoint to Planck's lecture. Indeed, although there is nothing to suggest that Heidegger was familiar with the argument that was made in Leiden, and in fact the dubious manner of his later attribution to Planck of the phrase "[t]hat is real which can be measured" ('Science and Reflection' 167) suggests no particularly strong grasp of the physicist's work, his notion of the world picture contains a number of similar basic precepts. The most striking of these is found in Heidegger's central claim that to speak of a world picture is not to imply "a picture of the world" (129) but, rather, "the world conceived and grasped as picture" (129). Like Planck, who proposed his theoretical world picture as a means by which to apprehend an objective reality not directly accessible, Heidegger also uses the world picture to establish the idea of a conscious experience of a nature determined in the first instance by representation. From that point, however, Heidegger's argument diverges from Planck's in terms of its angle of approach: in contrast to Planck's closing suggestion that, in the future, the word 'picture' could be dropped from usage, Heidegger maintains that the idea

of the world ‘grasped as picture’ is an issue that needs to remain critically foregrounded.

There are a number of reasons by which to explain the different critical interpretation that Heidegger forms of what is, on at least one level, the same basic notion of the world picture; only two are of immediate relevance in this particular instance. The first of these is Heidegger’s greater, or at least more explicitly evoked, awareness of the philosophical pedigree of the idea as it has been outlined in this chapter; the second is his variant opinion as to the persistence of an active anthropomorphic element in the world picture. To address the former of those points, it must first be observed that for Heidegger the ‘age of the world picture’ that the title of his essay alludes to is a specific one: modernity, understood to have been precipitated by the emergence of modern science. According to Heidegger, there is no change of world picture over time and between historical periods but, rather, “the fact that the world becomes picture at all is what distinguishes the essence of the modern age” (130). Whilst in Heidegger’s essay it is modernity that sees the ascendance of the world picture to a position of ontological and epistemological supremacy he does not, however, preclude the existence of the idea before that point. Referring back to Plato’s conception of Forms, Heidegger claims that Platonism contains “the presupposition, destined far in advance and long ruling indirectly in concealment, for the world’s having to become picture” (131). In effect, therefore, Modernity is not viewed by Heidegger to have marked the development of a new idea per se but, rather, the foregrounding and advancement of an older one that had been less critically evident prior to that. For Heidegger, the scientific revolution of the seventeenth century, with its championing of universal laws and enablement of technological advance, marked the true

beginning of what he held to be science's tyrannical claims over reality (Hans Seigfried 627); the age of the world picture is synonymous with the scientific age.

Closely related to that is the second key reason as to why Heidegger's formulation of the modern world picture differs from that of Planck's. In directly associating the world's becoming picture with the emergence of modern science, Heidegger also holds the corresponding development of new ideas of subjectivity, particularly Descartes' ego-centred philosophy ('The Age of the World Picture' 143), to have had an important role. Whilst Planck argued for the need to expunge anthropomorphous colourings from the physical world picture his primary target for criticism in that regard was positivist phenomenalism; the projected terminus of his thought was, as Carson argues, "the view from nowhere" of a universe still held to exist objectively in time and space ('Objectivity and the Scientist' 247). It is the quality of the relationship between human understanding and the world that Planck aims to reconsider, to make less determined by experience and more universal; by contrast, what Heidegger focuses on is the existence of that relationship itself, on a more fundamental level. One of the main issues with the concept of the world picture as Heidegger understands it is that its success is grounded in, and dependent upon, the existence of a self-aware observer and, strictly speaking, it does not matter if that observer is a human or one of Planck's hypothetical Martians. What is of most significance, as he sees it, is that the sharp distinction between subject and object introduced and consolidated by the methodology of modern science resulted in humans becoming "the relational centre of that which is" ('The Age of the World Picture' 128). Accordingly, it is not whether or not anthropomorphous elements obtain within scientific theory that is Heidegger's primary concern but, rather, the idea of nature understood in the first instance as the object of an inquiring intelligence.

The exact manner in which Heidegger seeks to establish the notion of the world picture and of the attendant idea that, as Ulrika Maude summarises, anything that exists "is now only in being in so far as it is at man's disposal, before him, as an object in relation to the viewing subject" (25) is particularly interesting in regard to quantum mechanical theory. Markedly, Heidegger's understanding of the world picture both depends upon a perceived tension between separation and immersion suggested by the subject-object relationship: slightly less obvious than the former, the question of the latter is critically raised by Heidegger when he argues that the term 'picture' should be understood to resonate with the colloquial expression 'we are in the picture' ('The Age of the World Picture' 129). In the essay, Heidegger uses that understanding primarily to outline the idea that he would later return to in his debate with Heisenberg, namely that in the modern age people do not truly encounter themselves: being 'in the picture' for Heidegger implies, essentially, an ontological withdrawal or abstraction from a more original, less presupposed, reality. Once again, however, Heidegger seemingly fails to fully recognise or explore the deeper significance of quantum mechanics in terms of its complication of scientific objectivity despite the problem frequently being discussed in similar language. As Carson has argued, the apparent weakening of the notion of objectivity within science centred on the fact that the "observer had to be brought into the picture" ('Objectivity and the Scientist' 248) and in a non-passive capacity.

As Heisenberg states in *Physics and Philosophy*, and as has been alluded to at points throughout this chapter, classical physics stemmed from "the belief – or should one say from the illusion? – that we could describe the world . . . without any reference to ourselves" (22). The challenges made against that supposition by both the work of quantum physicists and Heidegger's conceptualisation of the modern world picture should not be taken to be entirely congruous but they do,

nevertheless, ground themselves in the same broad critical point: the ineluctable self-referentiality at the basis of scientific knowledge. The main difference between Heisenberg and Heidegger in this regard lies in the fact that, whilst the latter primarily aims to reveal the illusionary quality of modern science's ultimate aim by exposing the subjective origins of the world picture, Heisenberg uses the critical reintroduction of observer into the picture necessitated by quantum mechanics as the means, in itself, to undermine that earlier belief. That is, whilst Heidegger remains focused on the disembodied aspect of the Cartesian subject, Heisenberg, and others involved in the development of quantum mechanics, found themselves forced to consider the figure of the scientist as, fundamentally, an *embodied* observer. Noting that shift, the particular significance of the theatre, and of theatricality, to the debate during the Modernist period starts to become more evident.

Indeed, although Heidegger elected to maintain the use of the term 'picture', in contemporaneous scientific discourse on the same general issue it was theatrical metaphors that were increasingly turned to explain key concepts. Referenced earlier was the insistence by both Bohr and Heisenberg upon humans existing as both actors and spectators; also notable is Schrödinger's claim that twentieth-century physics suggests that "the distinction between 'actor' and 'stage' is not expedient" (*Nature and the Greeks* 16). Accordingly, what is to be argued here is that during the Modernist period physics found itself grappling not only with its metaphysical origins but also the long-denied theatrical foundations of that metaphysics. Heidegger's notion of the world picture paves the way toward that idea more clearly than Planck's does but nevertheless still stops just shy of explicitly acknowledging and engaging it. The final task of this chapter is, therefore, to now draw together those critical loose ends and examine in more detail both how

and why theatricality became increasingly definitive of the scientific world picture, and also the general significance that this had for Modernist theatre makers.

Heidegger, whilst not the focus of the argument, once again provides a useful means through which to conduct the concluding part of this analysis, both in his continuation of Nietzsche's particular critique of science and his integration into that of a more extensive consideration of the basis of scientific knowledge. The first aspect of that remains part of the discussion of Heidegger's 'The Age of the World Picture' and is most potently expressed at the close of that essay. Like Nietzsche's circle of science, Heidegger's world picture is haunted by the idea of beyondness; what in *The Birth of Tragedy* was described as 'impenetrable darkness' becomes figured in Heidegger's essay as "the incalculable" (136). "Just to set down a limit is to create a reality that exceeds it" is Porter's hermeneutic assessment of the situation described in Nietzsche's study (110) and similarly, although slightly less explicitly, the same idea underpins Heidegger's model. The very ascendency of the world picture, Heidegger argues, is matched by the development of the "shadow" of the incalculable, the manifestation of "a space withdrawn from representation" that indicates that "which it is denied to us of today to know" ('The Age of the World Picture' 136). There are two things to note here in that regard. Firstly, the idea of the 'shadow' as being effectively a *manifestation* is not merely incidental: in the essay's appendix, Heidegger is insistent upon the fact that the term be understood not in the sense of it denoting a "lack" or a "denial" of light but as "a manifest, though impenetrable, testimony to the concealed emitting of light" (154). Secondly, and related to that, is the fact that Heidegger does not in fact entirely preclude knowledge of the incalculable but instead posits it to be beyond the scope of science; he suggests, in a manner somewhat akin to Nietzsche's hypothesis of

‘tragic knowledge’, that people “will know . . . that which is incalculable, only in creative questioning and shaping out of the power of genuine reflection” (136).

It is the idea of what Heidegger calls “genuine reflection” that brings the analysis to the point at which the question as to the specific relations between scientific knowledge and theatricality can now be considered. As noted, Heidegger positioned himself against Heisenberg in Munich because he held that the task of that reflection can only be assumed by philosophy (Carson, ‘Science as Instrumental Reason’ 496); it is to be argued here, however, in light of the vicissitudes of the old quarrel examined in this chapter so far and also through analysis of the essay ‘Science and Reflection’, that the space of the theatre is particularly capable of enabling that form of thinking. That is not to say that it alone can do so but, rather, that one of the influences that twentieth-century physics had upon art was that certain Modernist playwrights and theatre makers realised the increased critical potential accorded to theatricality by the epistemological crisis. Through engagement with that idea, it is to be claimed, Modernist theatre was able to re-conceptualise the notion of theatricality in manner that asserted for itself a new degree of autonomy within the context of the ‘old quarrel’: to move free of both the Platonist proscription and the Aristotelian legacy and establish itself as something that, as Badiou posits, “thinks” (*Handbook of Inaesthetics* 72). To further introduce both how and why this was the case, the question of theory, and specifically science as theory, requires consideration.

6.2 Three approaches to theory

The term ‘theory’ has appeared in various forms throughout this chapter in relation to science: scientific theories, theoretical physics, *Bildtheorie*, quantum theory, Nietzsche’s ‘theoretical man’, to name a few. But what, it might be asked, is theory

and how exactly does it relate to the discussion here? Certainly, that is a question that Heidegger also poses himself as a philosopher in 'Science and Reflection': "what does the word 'theory' mean?" he asks, referring to the essay's central thesis that "science is the theory of the real" (163). Beyond its evident significance to science and philosophy theory must, though, also be recognised to have a strong connection to theatre. As is often noted, 'theory' and 'theatre' have the same basic etymological root: the Greek word *thea*, meaning to look upon (Potolsky 76). Moreover, the two terms, stemming from a shared root, have remained persistently in vexed dialogue that is closely implicated with Plato's 'old quarrel'. Lehmann observes, to that effect, that the "history of the heated rivalry, conflicted mirroring, and mutual denunciation of theory and theatre points back to an unresolved question within philosophy itself: how is one actually supposed to 'see' one's own 'seeing'?" (*Tragedy and Dramatic Theatre* 27).

As that overview of the long and complex history of the term implies, whilst the question as to what theory is can indeed be asked, there is no straightforward or definitive answer to be provided here. Instead, by examining the issue in terms of those very same differences, disagreements, and ambiguities, the argument in this final section will use the problematised notion of theory as means to triangulate theatre, science, and philosophy in regard to the key concerns that have already been explored. Rather than seeking a single definition, it is to be suggested instead that 'theory' should be taken as having assumed three distinct but related manifestations in the twentieth century; distinctions enforced to a notable extent by Modernist theatre's engagement with physics. To that end, the analysis of Heidegger's 'Science and Reflection' will be framed by, first, a consideration of theory within science and, subsequently, an argument that builds upon Taxidou's interpretation of *theōria* as form of embodied philosophy (*Tragedy, Modernity and*

Mourning 35) to set out the idea of a theatre that employs its theatricality critically. Without proposing theatre to be an epistemological or ontological panacea, it can nevertheless be argued that if philosophy offers one way to consider the metaphysical problems of science, so too does theatre; similarly, questions that are unresolved within philosophy, such as that identified by Lehmann, might perhaps be more fruitfully addressed by more theatrical means.

6.2.1 Theory in science

Within the context of the modern physical sciences, theory is something that has traditionally stood in certain distinction from experimentation and observation insofar as methodology is concerned. Indeed, James Conant, an early twentieth-century historian of science, described a theory as being a "conceptual scheme" (4) and defined science as "a series of . . . conceptual schemes arising out of experiment and observation and leading to new experiments and new observations" (4). Although the terminology is different, such a definition still resonates strongly with Newton's argument for a science, or experimental philosophy, in which propositions are deduced from phenomena. In the sense in which it is most commonly received, regardless as to whether it is referred to as a proposition or as a conceptual scheme, or even as a *Bild*, a scientific theory is, therefore, a particularly functional understanding of nature: it accounts for phenomena and from that basis also enables further inquiry. The essentially iterative process, of observations leading to theories that lead to new observations, that Conant held to be the primary characteristic of the progress of science has, however, become increasingly disputed, perhaps most notably by his former student Thomas Kuhn.

In his hugely influential study *The Structure of Scientific Revolutions*, Kuhn conducts an extensive examination of the basis upon which science can be understood to progress and refine itself. Within any historical period, science, for Kuhn, is determined by a specific 'paradigm' which he broadly understands to be "research firmly based upon one or more past scientific achievements . . . that some particular scientific community acknowledges for a time as supplying the foundation for its further practice" (10). It is the shift between such paradigms, from the 'Newtonian' to the 'Einsteinian' for example, that Kuhn holds to most fundamentally mark scientific progress. Whilst in his explanation as to how such paradigm shifts take place he maintains, on one level, the general distinction between theory and observation, Kuhn is, however, also critical of the notion that science only advances through experimental application of theory, as Conant had previously claimed. "No process yet disclosed by the historical study of scientific development", Kuhn argues, "at all resembles the methodological stereotype of falsification by direct comparison with nature" (77). He does not deny that invalidation of theories by means of experiment has a function in the progress of science but, crucially, he posits that the rejection of one paradigm and the simultaneous acceptance of another depends upon "the comparison of both paradigms with nature *and* with each other" (77). Enabling and, indeed, necessitating such an interpretation, Kuhn argues, is the fact that there is always more than one theory that can be applied to a collection of data (76), a point that de Regt reiterates in noting that during the 1920s Heisenberg and Schrödinger initially each developed distinctly different theories by which to understand quantum phenomena (87). A theory, by this account, comes to be seen, therefore, not as merely an abstract description but as a particular way of approaching the perceivable world.

It is, to a certain extent, that idea of theory as something that can be referred to more directly in the process of scientific research that characterises the role of the world picture in Planck's outline of a specifically theoretical physics. The idealised future world picture that he discussed in Leiden is, effectively, a fully comprehensive theory that stands as the telos for paradigm shifts. Importantly too, here, the considerations concerning the representational implications of the term 'picture', that were examined earlier, should therefore also be understood to pertain to 'theory'. In addition, however, to its furthering of the idea of theory as being a form of scientific representation, the pointed description by those such as Einstein and Planck of their physics as being *theoretical* physics also foregrounds another methodological aspect that is of particular pertinence to this chapter: the assumed importance of intuitive thought, or pure reason. To that end, in his 1933 Herbert Spencer lecture, 'On the Method of Theoretical Physics', Einstein claimed that to the "discoverer in this field, the products of his imagination appear so necessary and natural that he regards them . . . not as creations of thought but as given realities" (270). Accordingly, by that reckoning, in order for science to arrive at a complete and unified representation of an objective reality, theoretical constructs can be considered and utilised by physicists as if they were themselves facts, or real objects.

The prominent, and often very successful, use of theory in that manner by twentieth-century physics can be understood to have marked, on the one hand, the reinvigoration of Platonism within scientific thought that has already been considered in this chapter. Quantum mechanical theory in turn then both furthers and complicates that position: unlike previous scientific theory, it no longer claims to pertain to an objective reality but, instead, represents only our interaction with nature (Heisenberg, 'The Representation of Nature' 100). As has been noted, the

dispute between opponents and proponents of quantum mechanics in this regard has been divisive and is still ongoing. If there is one particularly important point that both parties agree upon, however, it is that whilst science can be informed by metaphysics, answers to the metaphysical problems that still obtain within it are nevertheless beyond the scope of scientific theory (Bohr, 'Unity of Knowledge', 67-68; Schrödinger, *Nature and the Greeks* 95). So, whilst by the middle of the twentieth century physics had created a situation wherein the concept of scientific theory became elusive of any one simple definition, it can, however, be broadly understood as being on a fundamental level both a guide for empirical observation and also an object of rational thought. It is the peculiar tension between those two elements that Heidegger picks upon in 'Science and Reflection' when trying to show the "narrow philosophical boundaries" imposed by science upon human understanding (Tauber 7).

6.2.2 Science *as* theory: 'Science and Reflection'

In his preparatory essay for the Munich symposium, Heidegger presents a different interpretation as to how science and theory should be considered together: he directly equates them. In the modern age, Heidegger posits, science "*is the theory of the real*" (157). It is a statement that Heidegger himself acknowledges to present "nothing but questions" (157) and it is also one that continues to consolidate his earlier ideas concerning the world picture, although he oddly makes no explicit reference to that. That the world can be conceived of and grasped as picture, the definitive state of affairs in the modern age of the world picture, is the result of science's having become the theory of the real, wherein the real is that which "presents itself" (162). In working to explain what he means by this, Heidegger effectively seeks to engage with 'theory' as a form of trans-historical determiner of

human relations to nature, and one that currently exists as modern science. The manner in which he does so, however, is simultaneously both insightful and problematic, and particularly so in respect to theatre and theatricality.

Heidegger removes the distinction between theory and observation that had traditionally obtained within modern science, and he does so by exploring the etymological history of the term 'theory'. In doing so, however, he belies the fact that he is, as Weber also notes, another philosopher who succumbs to the "traditional distrust" of theatre whilst nevertheless according theatricality an importance within their thought (70). Heidegger makes only the briefest, parenthetical, reference to *thea* as being the root of theatre as well as of theory (163) and mentions it no further subsequent to that. Instead, he focuses upon the idea of *theōria*, originally denoting an attentive observation of "the outward appearance wherein what presences becomes visible" (163), to be associated with a way of life and, indeed, to be "the consummate form of human existence" (164). Theory, then, for Heidegger, originates as a way of seeing that has deep ontological implications; it is against that earlier form of *theōria* that he critiques the capacity of science as theory: within the new term "steals the shadow" of the older (165). The primary distinction that Heidegger identifies between the two terms is that, whilst *theōria* referred to an ostensibly pure form of simply beholding a reality that made itself present (164), modern theory, as modern science, "sets upon the real" (167).

The shift towards theory in its modern form is traced back by Heidegger, in the first instance, to the Roman translation of *theōria*/*theōrien* by *contemplatio*/*contemplari* which, he notes, means to "partition something off into a separate sector and enclose it therein" (165). Theory becomes, therefore, a form of observation that actively "sunders and compartmentalizes" that which it beholds; it

is in that sense that modern science must be understood, Heidegger argues (167). Accordingly, scientific observation, taken as theory, is posited to enforce a form of representation that "entraps the real and secures it in objectness" (168): the world picture, in other words. As has been seen, this is essentially in accordance with the view of many scientists themselves, and Bohr also notes, in a manner broadly in line with Heidegger's notion of a theoretical rendering of the real, that "the goal of science is to augment and order our experience" ('Atoms and Human Knowledge' 88). The problem with science as a modern *theōria* in this regard for Heidegger is, as he also alluded to in 'The Age of the World Picture', twofold: it limits reality to only that which can be represented as object and it is, at the same time, incapable of addressing the question as to what it cannot represent.

Having followed Heidegger up to this point there is now, however, an important issue that must be taken with his argument, and one that relates to both his engagement with Heisenberg but also to the broader contention of this chapter. Heidegger, towards the end of his essay, provides a broad summary of what he thinks his inquiry has achieved: "We have become", he claims, "attentive to that which is inaccessible and not to be gotten around, which is constantly passed over" (179). This is taken to be particularly noteworthy by Heidegger, if not entirely new, because through the strict application of his own interpretation of 'theory' he fundamentally precludes from science the possibility of doing anything other than 'passing over': "physics can make no assertions about physics" (176). In another period this might not be so problematic but, in his apparent determination to treat modernity as if monolithic, Heidegger fails to really consider the specific developments that marked twentieth-century physics, and especially quantum mechanics, as having effected such a profound rupture from that which came before. The notion of the straightforward divide between subject and object in

which Heidegger grounds his critique does not obtain within quantum mechanical theory and, as has been emphasised already, the physicists involved in its development were fully aware of the fact that they were having to reflect upon the nature of science itself. If the research into quantum phenomena, and the long and heated debates between leading physicists in the first decades of the twentieth century, indicated anything with particular clarity it was precisely the occurrence of that which Heidegger denied: physics making, even if only reluctantly, assertions about physics.

This is not to say that Heidegger is entirely incorrect in his proposition that a form of philosophical reflection is what is required to think about how we perceive reality in the scientific age; rather, it is to be suggested that he failed to realise the full potential of his argument in terms of the historical moment at which he set it out. To an extent distracted by his equal concern with modern technology as being the final result of science, Heidegger neglects to critically consider the schism that had divided science as theory. “Theoretical physicists”, as John Bell once stated, including himself amongst their number, now “live in a classical world, looking out into a quantum-mechanical world . . . we describe only subjectively . . .” (29); moreover, the exact divide is not clear, “nobody knows just where the boundary between the classical and the quantum domain is situated” (29). The positioning of that boundary is irrelevant for Heidegger, however, because unlike the physicists he tacitly critiques he is ultimately not interested in the possibility that the nature of ‘theory’ as a form of observation had, more recently than the seventeenth century, undergone another profound change, or that scientific reality had bifurcated as a result.

At the Munich symposium, Heidegger instead provides a judgement of science based largely upon the idea of its success in mastering our immediately

experienced, classically-objective, world and, because it *is* undeniably successful in that regard, he is content to assume that great endeavour of modern science continues untroubled. It is in that vein that he makes a statement that is remarkable given the argument that it succeeds:

> Today we speak of 'the crisis at the foundations' of science. That crisis, in fact, touches only the fundamental concepts of the individual sciences. It is in no way a crisis of science as such. Today science goes on its way more securely than ever before. ('Science and Reflection' 178)

Given that the essay arrived at that point through a rigorous exposition of the foundations of science as theory, and the establishment of physics as the paradigmatic science, Heidegger's claim that a crisis concerning the 'fundamental concepts' of physics is largely incidental marks quite a *volte face* on his part. Certainly, the entire edifice of science was not brought into dysfunctional ruin at the start of the twentieth-century, and it does still continue as a dominant force within culture, but the idea of its security in that regard is more complex than Heidegger would seemingly allow. Despite having critically argued for science to be understood in terms of 'theory' as a particular way of seeing, and despite having proposed philosophical reflection as the means by which to highlight the presence of what lies beyond science's ability to see, Heidegger is strikingly unconcerned by the fact that it is precisely in those respects that modern science was no longer so secure. That position serves his purpose when talking about technology but it is to the detriment of his argument about science: in insisting that there has been no real crisis in the idea of science as 'the theory of the real' as he set it out, Heidegger does not really reflect upon the fact that at a fundamental level the idea of 'theory' had undergone a further important vicissitude. It is in this regard that the notion of theatricality and the theatre becomes of renewed importance.

Heidegger is proposing an anti-theatrical solution to an issue that is at its root theatrical in nature, regardless of whether or not he explicitly acknowledges it as

such. The critical lineage of the term ‘theory’ that he traces in regards to science and the world picture stands in useful dialogue with the question of representation explored earlier in this chapter but Heidegger fails to consider one crucial component in the debate, and one that is essential to theatre: the body. He critiques the notion of the Cartesian subject but Heidegger nevertheless adopts its basic position and distinction: modern scientific theory, for him, remains something that is a disembodied function of reason, detached from what it observes, but his own reflection is no different. What physics was demanding, however, and what his own writing on science itself pointed towards, was a critical re-conceptualisation of the fundamental premise of theory and the scientific subject, and one that engaged with the issue of the relationship between the observer and the observed. That relationship is, as has been shown, as central to the long durée of the debate surrounding theatricality as it is to philosophy and science; the fact that quantum-mechanical theory had to account for limitations imposed by an embodiment that could, in Heideggerean terms, ‘not be gotten around’, accorded a new reflective potential to theatre. Indeed, what is now to be argued is that as twentieth-century physics, for those reasons, became more necessarily implicated with philosophy there arose a corresponding imperative to consider the idea that that which is theoretical, both scientifically and philosophically, is also inherently *theatrical*.

6.2.3 *Theōria*: the theoretical theatre thinks

In final response to Heisenberg’s claim at the start of this chapter, it is, accordingly, now to be shown that, far from the potential of contemporary physics to influence the development of art being a moot point, any change in scientific and theoretical paradigm must necessarily change the way in which theatre is conceived. Making the Modernist period particularly significant for both physics and theatre, however,

was the fact that the question of theatricality, of representation, was itself integral to the revolution in scientific thought. The most fundamental influence that this had, and the one to which the work of Beckett, Brecht, and Stein will be shown to relate, was that the theatre became a space for genuine kind of thinking, freed from the stigma of Plato's cave and Aristotelian mimesis and governed by new understandings of theatricality. To outline this, here, the aspect of *theōria* that Heidegger ignores, its close original connection to theatre, is to be considered.

The term 'theatre' is derived from the Greek *theatron*, a word that is generally understood as meaning 'place of seeing' (Ackerman and Puchner 6) but that can also be taken to denote more specifically, as Taxidou notes, "the place, the locus of *theoria*" (*Tragedy, Modernity and Mourning* 35). In her critique of the philosophical reception of *Antigone*, Taxidou uses this relationship between theatre and *theōria* as a means by which to argue for both the political efficacy of theatricality and also a new understanding of *theōria* as being "philosophy by other means" (35). Tracing the term's translation into Latin by Boethius as *speculatio*, Taxidou provides a philological reading that runs in useful parallel to Heidegger's focus on *contemplatio*. Whilst *speculatio*, drawn from the root *specto* meaning to look, was initially taken to denote a form of speculative thinking broadly akin to the original *theōria*, after Thomas Aquinas linked the term instead to *speculum*, or mirror, a distinct anti-theatricalism entered the discourse (34-35). In that manner, within a significant strand of Western thought *theōria* came to refer not to a type of thinking but, instead, to a form of distorted representation: it was associated with the spectacular and not with the speculative. Neither of those meanings are, on their own, particularly helpful for an attempt to redress the troubled relationship between theatre and philosophy but, as Taxidou argues, if the spectacular is considered as intertwined with the speculative then *theōria* "might be read as . . . a type of

philosophical practice that embodies enactment" (35). The emphasis on embodiment in this instance is quite literal; what distinguishes *theōria* from philosophy in Taxidou's account is the fact that it occurs in "the body with all its senses" rather than just what is taken to be the mind (35).

The potential scope of theatre's efficacy and autonomy is broadened further, however, if Taxidou's existing reading of *theōria* is integrated with not only Heidegger's interpretation of science as theory but also with both the scientific understanding of theory and the argument set out in this chapter as a whole. What the crisis in twentieth-century physics presented to the Modernists was the idea that theatrical praxis could embody a form of not only philosophical speculation but also scientific theorising, with all the claims that that had to being definitive of the physical world. A situation can therefore be seen to have arisen in which theatre is able to not only think, as Badiou and Taxidou have argued, but also to provide a representation that is less ontologically corrupted, less problematically removed from an idea of reality, than Plato had initially posited. What the critical emergence of the concept of the world picture into debates within physics and philosophy had effected was particularly potent reengagement with the binary inherent within the hierarchy established in the allegory of the cave; what quantum mechanics furthered was the more specific idea that the picture, or representation, was fundamentally theatrical. As the arguments concerning physical theories and representations of reality increasingly hinged around contested notions of subject and object, observer and observed, the world picture became more explicitly the world *theatre*.

The term 'world theatre' has, itself, appeared within Western thought at numerous points in the guise of *theatrum mundi*, and as a means to give expression to anti-theatrical sentiment. Stemming from the scenario that Plato

depicts in his allegory, the *theatrum mundi* metaphor has traditionally implied a qualitatively negative theatricalisation of the world and life as "mimetic spectacle" (Potolsky 76). As such, and especially so for Medieval Christian scholars, the term assumed, as Daniel Watts notes, an essentially "pathological" quality that emphasised the presumed falseness and inferiority of perceived reality (62). In arguing, here, that during the Modernist period the concept of the *theatrum mundi*, or world theatre, came once again to the fore through the debates pertaining to the crisis in modern physics, it is also to be stressed that it did so in a significantly different form, and one that accorded theatre great potential to engage with the 'incalculable' or 'impenetrable' problem encountered by science. Indeed, because the dominant paradigm within twentieth-century physics was one that had effectively philosophically recognised that theatricality obtains critically throughout the Platonist hierarchy, and that all theories of reality must accordingly treat it on one level as being theatre, the prevailing notion of mimesis within the theatre became unravelled. If reality, or the real, is understood to be a theoretical theatre (combining Heidegger's and physicists' notions of 'theory') then there is precedent for playwrights and theatre makers to conceive of theatre as having the capacity to not simply represent something but, instead, to *make present* that reality. Being, therefore, in those terms, the locus of a newly defined embodied *theōria* that thinks beyond metaphor, the theatre is also able to reflect upon the problem of the human body and senses, ineluctable and irreducible within scientific and philosophic thought, in a way that Heidegger cannot: bodies are present within theatre, both on stage and in the auditorium, and it thinks through them, in both senses of that word.

It is that fundamental idea that this thesis proposes needs to be incorporated into understandings of Modernist engagements with theatricality. What this chapter has worked to establish, in challenging Heisenberg's claim about modern art, is a

conceptual framework through which to view the general and underlying interrelationships between science, theatre, and philosophy. This framework can be applied to all aspects of Modernist theatrical experimentation, from the renewed interest in puppets and automata as a means to explore the relationship between identity and materiality (Kang Minsoo 250) to the Bauhaus theatre's interest in emotional expression and "mathematics in motion, the mechanics of joints and swivels" (Oskar Schlemmer 95). Of more particular interest to the subsequent chapters of this thesis, however, are the instances in which Modernist playwrights and theatrical innovators can be seen to have engaged more directly, and explicitly, with twentieth-century physics in exploring their shared concerns. As such, attention is now to be turned to the specific re-conceptualisations of theatricality developed by Stein, Brecht, and Beckett, and the manner in which they each seek to use the theatre as a means to present and think about the new physical understanding of reality and experience.

Chapter Two

Complementary Combinations: Gertrude Stein's Landscape Plays

Stein found in theatre first a problem and then an interest that spanned almost her entire literary career. One of the most notable figures within Western Modernism, Stein was also amongst the most prolific, and a large number of her published works are plays. Written between 1913 and Stein's death in 1946, the seventy-seven works that she wrote for stage represent the development and consolidation of a distinct and radically new form of theatre, one that was "like nothing that had ever come before" (Jane Palantini Bowers, *"They Watch Me as They Watch This"* 1-2). This is not, however, the common perception: if Stein's engagement with drama and the idea of theatre began with her identification of a problem with them then her solution has presented a problem to most critics in turn. Since the outset, with a few exceptions, Stein's operas and plays have either been ignored or have been argued to have not really been written for theatre.

Stein's dramatic works are undeniably challenging but, equally, they were neither conceived without performance in mind nor did they mount an unsurpassable resistance to being staged. Whilst it was the publication of *The Autobiography of Alice B. Toklas* in 1933 that first brought Stein, relatively late in her career, the wider attention and acclaim that she had often desired (Dana Watson 90) this popular reception was furthered by the production of her opera *Four Saints in Three Acts* the following year. Produced in collaboration with the composer Virgil Thomson, *Four Saints* was, as Steven Watson notes, a landmark occasion for the American stage in several regards: not only did it take a major step in its use of a racial diverse cast, it also simultaneously attacked theatrical convention and brought Modernism further into the awareness of the general public

(7). If not, perhaps, the theatrical event of the year the production of *Four Saints* was, nevertheless, a success.

The result of this ascent by Stein into the public eye and imagination was a lecture tour that ran for almost six months from 1934 into 1935 and saw her traverse much of the United States. For Stein, these lectures represented the opportunity to expound in more detail her thinking about art as well as her thought in general. One of these lectures was entitled ‘Plays’ and was also published in 1935 as an essay that Bonnie Marranca has described as being “one of the most remarkable . . . written by an American playwright” (XI). Despite this, however, and also despite the fact that, as S. Watson states, Stein’s lecture clearly establishes that she has a “goal” for the genre (90), there has been strikingly little attempt to engage with Stein on these terms. ‘Plays’ certainly is a remarkable essay; it is also quite remarkably neglected. Indeed, more has been made of the coincidence of Stein’s lectures with those delivered by Einstein, who had then recently immigrated to the United States from Germany, than of her lectures in respect to her thinking about theatre. In this regard, Stein stands uniquely amongst the playwrights considered in this thesis as being the only one who has perhaps been more frequently analysed in relation to science than to theatre.

Stein’s relationship with science in general, as well as her awareness of the situation that developed in physics during the early twentieth century, are important to an understanding of her work. Both of these aspects are, however, also more complex, or at least run more deeply through Stein’s thinking, than is often given credit; furthermore, their significance is most markedly evident in her works for theatre. The parallelism between Stein and Einstein established by the American media in 1935 is, in many ways, emblematic of what could be termed an analogical approach towards Stein and the new physics. Noting that both Stein and the

physicists of the time were thinking and working and presenting ideas that appeared to radically differ from that which came before (and, in the eyes of the general public, often quite simply that the work of both seemed utterly inscrutable), such an approach primarily views Stein as having done something similar to scientists such as Einstein. Similar to physicists, that is, but also essentially distinct from them; it is in this vein that Mina Loy, both Stein's friend and contemporary, wrote of her in 1924:

> Curie
> of the laboratory
> of vocabulary
> she crushed
> the tonnage
> of consciousness
> congealed to phrases
> to extract
> a radium of the word. (94)

Likewise, it is in broadly the same vein that Ulla Dydo, writing more recently and as a literary critic rather than as a poet, provides another assessment that brings Stein and major twentieth-century physicists into close proximity:

> No time, no space, no center, standard, or authority. Stein wrote in a world changed by Einstein and even more so by Heisenberg and Schrödinger. She knew she was one of them, constructing for words what they had constructed from quantum mechanics. (Introduction 3)

In both of these cases the comparison that is drawn is very favourable to Stein: for Loy as well as for Dydo, what Stein was doing in her field was of similar significance and profundity as the research that Curie, Einstein, or Heisenberg were conducting in theirs. This is not necessarily in itself an inaccurate claim and it does serve to illustrate one of the ways in which, within the Modernist zeitgeist, there was a sense of awareness of the fact that crises and paradigm shifts were occurring in all areas of culture and society. Despite this, however, there are two main problems with this analogical approach to considering Stein in conjunction to physics and it is in addressing these that this chapter moves forward.

The first of these problems lies in the centrality of analogy itself within interpretations such as that which Dydo offers. In establishing a precedent for what Steven Meyer describes as being a critical position that views “Stein as physicist” (74), analysis becomes effectively limited to an exercise in creative description: drawing from the lexical field of physics so as to ascribe to Stein’s aims and achievements a particular kind of cultural significance. Stein was not a physicist and to simply place her on a pedestal of equal height to that of the early quantum theorists is to ignore the fact that the work of both was rooted in the same ancient dispute concerning art, science, and our relation to the natural world, as was set out in Chapter One. The way towards an alternative, and more complex, understanding of Stein can in fact be seen to exist to an extent in Dydo’s general inference that Stein herself had an awareness of the changes effected by contemporaneous physicists and her position in relation to them. Such an argument, however, finds more extensive expression in the work of critics such as Meyer, who analyses of some of the points of connection that Stein had with those working in science, or Kucharzewski, who advocates the need to “establish the theoretical common ground” (500). Although both of those approaches are useful in starting to move beyond the critical lens of ‘Stein as physicist’ they also both fail to provide a solution to the second problem to be found in Loy’s and Dydo’s assessments of Stein: the prioritising of ‘the word’.

When Loy writes of Stein extracting “a radium of the word”, or Meyer explores the correlation of writing and science, the emphasis is always, with varying degrees of explicitness, on language as a written medium. Loy’s depiction of Stein crushing the ‘congealed’, ossified, phrases of linguistically expressed consciousness so as to introduce an aspect of underlying instability is striking but it also presents a fairly narrow view of Stein’s creative goals. Language and ‘the word’ are of immense

significance to Stein but she was also interested, often relatedly, in the phenomenological nature of the theatre as a space; in theatricality as well as literariness. As such, this is reflective of the situation within existing criticism wherein most studies that consider Stein with reference to science in any manner do not seriously analyse her thinking about performance, and the few studies that do examine Stein's plays as actually being plays seldom also consider the relevance of science to her aesthetic.

The understanding of Stein's work that this chapter undertakes to establish, then, is both one that considers her landscape plays as intended for performance and also one that holds her awareness of, and engagement with, the problems developing in the physical world picture to be crucial in realising the significance of her thinking about theatricality. In making the argument for that critical position, this chapter will move first to outline the manner and extent to which issues relevant to the understanding of physics at the time can be seen to have been an influence upon aspects of her thought, or present within them. Following that, the case will be made, through analysis of the essay 'Plays' as well as passages from a number of her plays themselves, for the necessity of challenging the view of Stein as being a proponent of anti-theatricalism. Finally, drawing those together, this chapter with critically examine Stein's late play *Doctor Faustus* (1938). This reworking of the Faust legend, and what Shepherd-Barr views as the "ur-science play" (17), represents not only, it is to be argued, "the culmination of Stein's thinking about the modern world" (Sarah Bay-Cheng 73) but also the culmination of Stein's theatrical theory and praxis that brings together issues of subjectivity, knowledge, identity and a crisis in science.

1.0 “science meant that a solution was a way to a problem”

More so than for many Modernist figures, Beckett and Brecht included, Stein’s educational background was in the sciences. At Radcliffe College, which was then Harvard’s female-only annex, Stein studied psychology under the general direction of Hugo Münsterberg but also the supervision of William James (T. Armstrong, *Modernism, Technology and the Body* 197). Following her time at Radcliffe, and encouraged by James, Stein enrolled at the John Hopkins School of Medicine in 1897, but dropped out in her fourth year after failing a course, as well as losing interest (Stein, ‘The Gradual Making of *The Making of Americans*’ 86). Whilst Stein’s potential career in either psychology or medicine remained unrealised, the years spent at both Radcliffe and John Hopkins played a significant role in shaping aspects of Stein’s thinking about science, perception, and identity, both through her own study but also notably through her acquaintance with James (Robert Chodat 588).

James, the older brother of Realist writer Henry James, was one of the leading names in philosophy and psychology at the time, and his importance here is twofold: both in terms of Stein directly as well as in relation to the development of key aspects of quantum mechanics. For Stein, James was one of the figures responsible for causing her to really think about what science was, or what it claimed to be. In a telling section of *Everybody’s Autobiography* Stein recounts the manner in which her opinion regarding science insofar as it related to knowledge, progress, and forms of society, developed. Initially, when she was young and when “evolution was still exciting, very exciting” (209), there was in her mind a sense of the possibility of “knowing everything” (209). This was, though, not entirely straightforward and was couched in her idea of science as being a mode of thought that refused to come to a standstill:

> Science meant everything and any one who had an active mind could complete mechanics and evolution, philosophy was not interesting, it like religion was satisfaction in a solution but science meant that a solution was a way to a problem. (209-210)

The distinction that Stein draws, here, between science on the one hand and philosophy and religion on the other is based upon what she perceives to be different attitudes towards the idea of "a solution". Whilst philosophy and religion are posited by Stein at this point to be systems that find in a solution a satisfactory endpoint, science is clearly positioned as being driven by continual progress. This, however, was a view that was called into question by James; as Stein continues to relate:

> That was what science was every solution was an opening to another problem and then William James came that is I came to him and he said science is not a solution and not a problem it is a statement of the observation of things observed and perhaps therefore not interesting perhaps therefore only abjectly true. (210)

The shift in position here is significant for a number of reasons, first of which being that which it implies to have been central to Stein's understanding of science. In claiming that science is neither a solution nor a problem but simply a 'statement of the observation of things observed' James, in Stein's account, is working against the idea of science as something concerned with an independent reality. If Stein was not interested in either philosophy or religion due to their satisfaction within their own solution then James, in his claim that science is primarily a comment on observation, appears to have challenged the clarity of the distinction that she drew between them.

The other point of significance to be found in Stein's account of James' view on science lies in the common ground that it finds with issues that developed with the emergence of quantum theory and mechanics. As was outlined in the previous chapter, through the analysis of the encounter between Heidegger and Heisenberg, one of the main epistemological upsets that quantum mechanics caused was the

fact that it necessitated that physics needed to consider itself not as describing nature but as describing, instead, our observation of it. If this opinion was expressed by James to Stein prior to the work done on quantum physics during the 1920s then it also, however, found its way into the thought of those physicists involved; most notably Bohr. One of the most important physicists of the twentieth century, Bohr's first major contribution came with the publication of his work on the structure of the atom in 1913, for which he was later awarded the Nobel prize in 1922. Bohr was also, however, central to the development of quantum mechanics and had, as Peter Gibbins notes, a "darkly metaphysical mind . . . preoccupied with that central question of any philosophy of physics: to what extent may the physical world be described?" (49). The step toward an answer to this question was found, by Bohr, in the development of quantum mechanics and what is generally referred to as the Copenhagen interpretation of that mechanics.

The Copenhagen interpretation refers to the various principles and equations that were formulated over the 1920s and which, together, work to establish a theoretical means by which to understand subatomic behaviour. One of the foundations of this interpretation is Bohr's philosophy of 'complementarity', which concerns the manner in which phenomena are understood (John Bell 189). As Bohr sets out in 'Discussion with Einstein', such a notion is necessitated by paradoxical results produced by different experimental conditions: evidence that is obtained under these different conditions cannot, he states, "be comprehended within a single picture, but must be regarded as *complementary* in the sense that only the totality of the phenomena exhausts the possible information about the objects" (40). In this manner, Bohr provides one means by which to make sense of the fact that light can be shown, by means of experiment, to behave as both a particle and a wave: rather than seeking to eliminate the apparent contradiction we

must, instead, form a conception of light as being a particle-wave duality. For Bohr, as Abraham Pais states, quantum mechanics makes null the question as to whether light (or matter) *consists* of particles or waves and asks, instead, whether it *behaves* like them (22). Inferable from this, at least on one level, is the idea that the manner in which we observe something is required to assume a more explicit and significant presence within models of physical understanding. That which the notion of complementarity serves to symbolise, Bohr therefore argues, is "the fundamental limitation, met with in atomic physics, of the objective existence of phenomena independent of the means of their observation" ('Light and Life' 7).

Bringing the argument more clearly back to James and Stein, however, is the claim made by some, including the physicists David Bohm and F. David Peat, that Bohr's concept of complementarity was "suggested to him by his familiarity with Danish philosophy and the writings of . . . James with their notion of the 'stream of consciousness'" (94). Certainly, Bohr himself, in an interview conducted in 1962, professed an admiration for James, claiming to have read his work early on in his career and found it "most wonderful", particularly the idea of the stream of consciousness (qtd in Holton, 'The Roots of Complementarity' 174). Although he expressed an eagerness to pursue the matter further, Bohr died the following day, before the next planned interview session, and so, as Pais contends, the exact extent and nature of James' influence must remain somewhat conjectural (424). With that in mind, it is nevertheless still possible to find notable resonances between the two thinkers in terms of what they say about the relation of the mind to nature, or of subject-object interaction regardless as to whether or not James' writing can meaningfully be called "quintessentially quantum-theoretical" (William Stephenson 520). The theory of consciousness that James works to establish in *The Principles of Psychology* both calls into question "our notion of a scientific or

philosophical system" (255) and seeks to address the problem of the inherent transience of the present moment in terms of our understanding and sense perceptions. Central to James' argument is the idea that the language and the then current scientific systems essentially do not fully accord with the manner in which our consciousness, on a fundamental level, apprehends the world. For James the notion of fixed, or objective, certainty does not exist: our understanding of the world is constantly changing, albeit often very slightly, due to thought being, as he sees it, an endlessly expanding composition of different perceptions separated by time. Discussing language from this position, James makes the claim that it works counter to our actual conscious experience precisely because it does not recognise this actuality:

> We name our thoughts simply, each after its thing, as if each knew its own thing and nothing else. What each really knows is clearly the thing it is named for, with dimly perhaps a thousand other things. It ought to be named after all of them, but it never is. (241)

In this idea that we should, in fact, conceive of things not as existing with a singular self-determination but rather as being within our thought as the sum of all our perceptions pertaining to it, a similarity to the notion of complementarity that Bohr introduced into physics can be found. It obviously cannot be taken as being an exact transferral, but Bohr's idea of the wave-particle duality might well be seen to be something "named after all" perceptions of it.

If Stein's time at university under James introduced her to ideas and schools of thought that were to soon become increasingly relevant in discussions concerning the physical world picture, and given the courses that she took at Radcliffe there can be little doubt as to her familiarity with James' work (Kucharzewski 502), then it was also not her last direct encounter with those working in that general field. After leaving John Hopkins and embarking instead on a career as a writer, Stein would later meet another thinker whose ideas would have a significant impact upon her:

Whitehead. According to Stein's own account, she was familiar with three "first class geniuses" in her life: one was herself, another was Pablo Picasso, and the third was Whitehead (*Alice B. Toklas* 9). Stein's first encounter with the Whiteheads came whilst staying in Cambridge with Toklas immediately prior to World War One and, striking up a friendship, when it became apparent that a return to Paris would be delayed, they lived with them at their home in Lockridge for a number of weeks. Whilst there, Stein and Whitehead "walked endlessly around the country" and talked about "philosophy and history" (161), although Stein provides little by way of detail as to the substance of these discussions. Whilst Linda Wagner-Martin claims that Stein had "long been intrigued with Whitehead's concept that all life – event, time, character – is interactive" (123) this is, as Kate Fullbrook highlights, perhaps a somewhat anachronistic assessment as at that point all of Whitehead's published work, most significantly *Principia Mathematica* (written jointly with Russell), had been concerned with mathematical logic (252). Whitehead was by no means, however, a thinker with a narrow range of interests or abilities, and Wagner-Martin's assessment would in fact apply well to the period following the War when he began to focus on, first, the philosophy of science and then, building on that, a metaphysics that both differs remarkably from any other in Western philosophy and that also bears striking similarities to quantum mechanics (Michael Epperson 128).

When Stein wrote *Alice B. Toklas*, Whitehead was firmly established as a philosopher of science, through lectures and books such as *An Enquiry Concerning the Principles of Natural Knowledge* (1919)*, The Concept of Nature* (1920), and *Science and the Modern World* (1926). All of these attempted to outline and make sense of the way in which science works, or claims to work, to position people in relation to nature, and Whitehead draws upon both historical principles as well as the more recent developments of relativity and quantum theory. The culmination of

this, however, was the delivery by Whitehead of the Gifford Lectures at the University of Edinburgh between 1927 and 1928. Subsequently published as *Process and Reality*, Whitehead established in these lectures a new system of thought: 'process philosophy'. Having made the argument in *Science and the Modern World* that following the advent of quantum theory physics "must conceive its fundamental notions as abstractions derived from . . . direct intuition" (190), in *Process and Reality* Whitehead undertakes to expound a cosmology in which any understanding of reality is positioned as more contingent upon recognition of the way in which people apprehend the world as embodied beings.

Although far too complex to do full justice to in summary here, Whitehead's metaphysical scheme contains at its core the idea of a reality constituted of an "extensive continuum" (66) of potentialities that are then actualised as entities through human prehension (66-7). This then sits within the process of 'concrescence' by which things acquire "individual unity" (211); as a process, concrescence is exemplified, as Epperson notes, by the theory of quantum mechanical state evolution which also stands upon the notion of processing a continuum of potential data (135). As such, Whitehead develops a very particular notion as to what it is that we perceive as objects in reality:

> each actual entity is itself only describable as an organic process. It repeats in microcosm what the universe is in macrocosm. It is a process proceeding from phase to phase, each phase being the real basis from which its successor proceeds towards the completion of the thing in question. Each actual entity bears in its constitution the 'reasons' why its conditions are what they are. These 'reasons' are the other actual entities objectified for it. (215)

In this notion, first expressed at the same time as the final form of the Copenhagen interpretation was being set out and debated by physicists gathered at the Solvay International Conference, Whitehead calls for a radical revision of the idea of nature that underpinned classical physics. The emphasis is shifted from a fixed, or objective, universe that exists independent of the mind to, instead, the notion of a

universe that is an extensive continuum of which we are a part but can only consciously experience through an interactive process of actualisation from potentiality.

The possible influence upon Stein's thought of this new formulation of both epistemology and ontology, as well as of James' views on consciousness, has been extensively traced by Meyer in terms of the development of a distinct literary style. As Meyer sees it, there is in Stein's experimentation with patterning and rhythm an attempt to express the processes that the philosophers, by contrast, analysed (184). Certainly, there is a great degree of validity to this claim and in lectures such as 'Composition as Explanation' and 'Portraits and Repetition' Stein can be seen to set this out to an extent herself. In particular, the conception that Stein forms of a 'continuous present' and her specific understanding of repetition in relation to her work lend themselves to such an interpretation. Just as Stein seeks to make clear that the continuous present is distinct from "beginning again and again" ('Composition as Explanation' 25), so too does she go to some length to emphasise that she does not use repetition in her work ('Portraits and Repetition' 108). The two arguments are related in the fact that both are grounded in a physical world picture understood as being defined by process rather than stasis: Stein's continuous present is not simply beginning again, and her style does not repeat, precisely because what she is trying to express is reality as the experience of continual and contingent actualisation.

Whilst all of that is evidenced in Stein's avant-garde use of the written word, that which studies such as Meyer's fail to fully acknowledge is that running throughout the thinking of James, Whitehead, and the quantum physicists is a new form theatricality operating as an active and critical concept within scientific understandings of reality. In the work of James and Whitehead this exists mainly

implicitly within their sustained focus on the idea of the human experience of nature as being necessarily a part of that which we understand that nature to be. With the physicists involved in developing quantum mechanics it arguably finds more direct expression; it is worth reiterating, here, Bohr's statement that "when searching for harmony in life one must never forget that in the drama of existence we ourselves are both actors and spectators" ('Discussion with Einstein' 63). The issue central to the crisis in physics is, as has been shown, the incompatibility of physical, material, experience of the universe on the fundamental level with any theoretical abstraction that aims to establish a non-anthropomorphous world picture. If, then, Stein's prose and poetry are taken to also engage with these ideas, and indeed they do, then her experimentation in this regard also represents an attempt to infuse theatrical principles into written texts: the experience of time as crucial element; objects understood as formed by processes of perception.

Running alongside Stein's re-conceptualisation of the possibilities of the written word, however, was an engagement with theatre that represents a more direct and critical engagement with the same fundamental ideas concerning the experience of reality as were also being debated within physics. Theatre, as a transient medium strictly governed the space and time of experience stood, for Stein, as a means by which to both explore and present a world in which, as James had first told her, science is only an observation of things observed. Having outlined the manner in which Stein was both directly and indirectly present within debate concerning the issues surrounding twentieth-century science, the argument must now move to examine her theatre itself in light of this. In order to do so, the difficulties that Stein's plays might initially be seen to pose will be briefly analysed; moving on from that, her theoretical writing on the question of plays will then be examined so as to

show more exactly the importance of theatricality to Stein's thinking about the world.

2.0 The problems of Stein's theatre and the question of anti-theatricality

In order to work towards a better understanding as to exactly how Stein rethought theatricality, and the significance of this in connection to the 'old quarrel', it is useful to first address the problems that it poses to both critics and previous conventions and rules of theatre. Indeed, whilst it is to be argued that Stein's plays do represent both a sincere and profound engagement with possibilities afforded by theatre and theatricality, and should be taken as such, it also needs to be acknowledged that it is not entirely without evident reason that these plays have tended to occupy a void within existing criticism. By highlighting both a number of the difficulties that Stein's dramatic writing can initially be seen to present, as well as the manner in which they have often found themselves positioned within the anti-theatricality debate, a more effective counter-argument can then be made.

Geography and Plays (1922), *Operas and Plays* (1932), and *Last Operas and Plays* (1949) represent, as has been stated, three decades of writing for theatre and seventy-seven works for stage, most of which have received neither performance nor significant critical attention. One reason as to why this might be the case is immediately apparent upon first encounter with the great majority of Stein's dramatic output: they are dense and complex works that also frequently display what Nick Salvato has referred to as a "complete abandonment of theatrical method" (39). This abandonment of established method is perhaps most clearly displayed in Stein's handling of both character and dramatic time within her work, these being two fundamental components of any theatre, particularly classical. Stein's plays tend to be devoid of any narrative arc that is enacted over the time of

the performance and the characterisation within them is generally either vague or not fixed. Not only do characters frequently appear fluid over the course of a play, with names both merging and separating (Bay-Cheng 24), but Stein frequently does not make it clear as to exactly who it is speaking at a given point whilst also eschewing other conventional textual indicators of an allegiance to the stage (Nicola Shaughnessy 63). Moreover, in numerous of Stein plays, and particularly her earlier works, there often appears to be no recognisable dramatic characters of any kind or form. The opening of the 1916 play *Mexico* illustrates well, here, several of the difficulties that Stein's theatrical writing poses:

> Ernestine.
> Have you mentioned tracing out California.
> I have.
> How big is it.
> As big as a boat.
> What boat.
> The city of Savannah.
> Have you succeeded in tracing the origin of the word ugly.
> I have.
> It means crab.
> It certainly means crab.
> Crabbed is an instance.
> We learn about rocking chairs from them.
> Kites are an example.
> We learn about peaches from them.
> They learned them too.
> Were you dreaming badly. No. Then go to sleep again little sweetheart.
> Ernestine.
> It is easy to see four boats. Boats are a ship. There are English and Danish and other boats. It is hard to tell the Italian flag. Hard almost impossible.
> I do not mean to be discourteous.
> Ernestine.
> Come in.
> John.
> Did you meet him. (304)

In this passage, then, there appears to be a conversation taking place between at least three people; this, however, is not explicitly evident in the text itself. Indeed, those opening lines provide a good example of what it is that Bowers means when she argues that in Stein's early plays "[e]ven when speakers are named . . . and

even when they give us information about themselves, they are not characters" (*"They Watch Me as They Watch This"* 20). Certainly, there is an 'Ernestine' and also a 'John' who are named, that much is clear, but it is difficult to say more about them. Ernestine is present from the start but it is not immediately obvious whether the initial 'Ernestine.' is a statement spoken by another person or an indication that the following line should be spoken by her. If, however, it is assumed that the first set of exchanges takes place between two people (and this must be acknowledged to be an assumption as it is not specified by Stein as to who the other speaker is at that point) then, following the lines through in each case it would seem that the 'Ernestine.' is not spoken, for otherwise the sequence of the dialogue would have her pronouncing the second statement of her own name which, although not impossible, is unlikely. Equally, it is possible that John is the other person speaking from the start but, given that his name first appears after Ernestine says 'Come in', it seems more logical to posit that John has hitherto not been active; whether 'Come in' is an invitation to physically enter into the scene or merely to join in with the conversation is, however, also not made evident. Accordingly, from that brief analysis, only one of many that are possible, it might be concluded that within this section of the play that present on the stage in some form are: Ernestine, the person(s) initially in dialogue with Ernestine, and John.

Such difficulty in simply trying to establish who it is that is speaking at any one point even before the content of the dialogue is given consideration not anomalous when approaching Stein's plays, nor is *Mexico* a particularly obscure example. Indeed, whilst the identity of the speakers is unclear, and the content of the conversation abstract, the dialogue here still has the advantage, for the reader, of being recognisably a conversation as opposed to a series of unconnected utterances. In reaction to such difficulties, however, the common critical response

to Stein's plays has been to either ignore them entirely; to argue that they are not actually plays but are, rather, examples of abstract prose or verse; or to recognise that they have a connection to the theatre but to attempt to understand them solely in terms of their language. As such, Stein's theatre is drawn into the centre of the debate concerning the idea of a Modernist anti-theatricalism that is extensively, albeit problematically, examined by Puchner.

Modernism, Puchner argues in *Stage Fright*, saw the emergence in theatre of two opposing but related crises: on the one hand a "crisis of language" and on the other the "crisis of the living actor" (15). Either language as a means of representation and communication was perceived to be no longer entirely adequate, leading in turn to an emphasis being placed on the materiality of bodies, or by contrast, the physical presence of actors on stage was a problem that might only be solved by a retreat into language. Whilst Puchner, here, is arguably astute in the identification of language and the performing body as being particularly active concerns of Modernist theatre, the binary that he establishes introduces problems of its own that come to light in relation to Stein's plays. Most significant of these is the fact that in noting the form that Stein's plays take on the page, and the relative absence of stage directions or other dramaturgical indicators, Puchner is lead to argue that Stein is working against theatre. Considering *Four Saints*, he suggests that

> [c]entral features . . . become visible only when we recognize that this text deliberately opposes actors, stage props, and the theatrical space itself. This resistance to the theater emerges with particular clarity in the process of staging. (101)

The idea of a resistance to theatricality that Puchner introduces in this instance runs counter, however, to Stein's own objectives as they emerge through closer engagement with her work. As has been evidenced, Stein's plays do present numerous difficulties but these, it is to be argued, are not indicative of an

antagonism towards theatre, or of a retreat from the stage onto the page. Instead, by emphasising, here, the fact that the Modernist period was one marked by what was in many ways the most radical engagement with theatre since the time of the ancient Greeks (Taxidou, *Modernism and Performance* 2), Stein's work should be seen not as trying to resist the space of theatre but as seeking to reimagine it.

Central to an understanding as to exactly how and why Stein engaged with, rather than resisted, theatricality is the idea that she did not see an imperative to hold language and the body separate as two different problems. Instead, for Stein, the problems of the theatre were the problems only of one particular kind of theatre and so the solution was to devise a new way of thinking about theatricality that was not defined by those notions that had held sway previously. The first step toward setting out such a position lies, most simply, in noting what Stein herself had to say about what it was she thought she was writing; this finds particularly direct expression in 'Plays': "I think and always have thought that if you write a play you ought to announce that it is a play and that is what I did" (74). Stein does indeed do this and, beyond the fact that her plays were published in volumes that clearly labelled them as being such, many of them also have 'A Play' (or some variant thereof) affixed to their title. Whilst this has frequently been interpreted by critics, as Julia Fawcett observes, as implying "a critique of the theatre rather than a sincere engagement with its conventions" (139) it is to be argued here that the opposite is in fact the case. Or, more specifically, that although the idea of a 'critique' of theatre does have a certain degree of relevance in relation to Stein's plays this is only the case if the term is taken to denote at the same time an engagement with theatricality that is both sincere and revolutionary.

Building on this, the next step is to address the main question that has been largely ignored in existing criticism: exactly how it is that theatrical performance is

positioned within Stein's thought as a whole and, furthermore, as to what the stage offered Stein that the written word, whether poetry or prose, was unable to do. Stein's essay 'Plays', in which she claims to set out all that she knows about plays (82), provides the key to an attempt to address that issue. Stein would later consider plays more abstractly in *The Geographical History of America*, a work described by William Gass as being her "stylized presentation of the process of meditation" (23), speaking of the "human mind at play" (*Geographical History* 147), but it is the more particular focus of her essay that is to be the primary consideration here. Although less of an exercise in her idiosyncratic literary style than her earlier 'Composition as Explanation', 'Plays' is a deceptively complex essay deeply concerned with phenomenological problems and that is, Marc Robinson rightly observes, "as much about being a spectator as being a playwright" (187). In performing a critical analysis of this still relatively unexamined text, the aim of the next section of this chapter is now to make the case for the centrality of materiality and embodiment within Stein's theatre and the concept of the landscape play that she developed.

3.0 Mapping the landscape play: a reading of 'Plays'

3.1 Difference and combination

Stein opens the essay not by talking about plays but by instead discussing that which she calls her "fundamental" discovery about writing: namely, that sentences are not emotional whilst paragraphs, despite their being constituted of sentences, are; further, that "this difference was not a contradiction but a combination" (59). Seguing, then, from the page to the stage, Stein proceeds to posit that plays, too, possess a fundamental quality that is combinatory and not contradictory; the difference that is highlighted in this case, however, is between the emotional times

of the play and the audience, rather than between sentences and paragraphs. "[Y]our emotion concerning that play" writes Stein, speaking of the experience of being in the audience, "is always either behind or ahead of the play at which you are looking and to which you are listening" (59); this difference between audience and play is what drives Stein's interest in theatre. It is, however, a disjunction that Stein does not find entirely to her liking and, in an important subsequent paragraph, she states:

> This thing the fact that your emotional time as an audience is not the same as the emotional time of the play is what makes one endlessly troubled about a play, because not only is there a thing to know as to why this is so but also there is a thing to know why perhaps it does not need to be so. (59)

Stein is quite clear here as to what it is that is central to her own approach to theatre: the syncopation involved in experiencing what must be assumed to be a relatively traditional linear play, one that works towards a certain *telos*, is problematic for her but, crucially, indicated through the phrase "it does not need to be so" is her belief that this is necessarily a universal rule for theatre. 'Plays' is, at this point, implicitly set on course not just to inform Stein's audience of what it is that she knows about theatre but also to illustrate how she has re-conceptualised it.

The notion, however, of a "difference" that is "not a contradiction but a combination" requires further consideration in order to allow this analysis to fully advance. Despite the fact that Stein utilises this idea as an apparent means to connect her thought on writing to her thinking on theatre, the conceptual forms that it assumes in both instances are not as congruent as they ostensibly seem. When Stein outlines her discovery about writing, the "difference" in question is quite evident: it is between "unemotional" sentences and "emotional" paragraphs; it is, therefore, a qualitative distinction between two types of unit constitutive of a written text. To hold that such a difference implies a contradiction would be to argue that it is saying incompatible things about language: a paragraph cannot be seen to be

emotional *and* be formed of unemotional sentences. In proposing the difference to be seen as a combination, however, Stein is advocating an understanding that is essentially completely different. Stein's argument is that the fundamental aspect of writing must be understood to be the fact that it is formed of a combination of elements whose difference is seemingly contradictory. Contradiction and combination are not, despite the manner in which Stein appears to use them, antonymic terms; consequently, sentences and paragraphs can be seen, held independently, to embody contradictory qualities but, at the same time, when thinking in terms of writing as a whole the difference between them must, according to Stein, be seen as indicative of a constructive combination.

In Stein's discussion of plays, the difference that she identifies appears equally clearly delineated: it is between the emotional time of the play and the emotional time of the audience. Where this differs, crucially, from the difference that is fundamental within writing, is in the fact that it is not simply a qualitative distinction that Stein is highlighting: the difference that she perceives in the case of plays has its basis in relational disjunction. It is that the temporal experience of the audience is not synchronised with the time of the scenes enacted before them that troubles Stein in particular; not that, for example, a supposedly sad event on stage inspires happiness. In this sense, Stein's interest and engagement with the theatre is to be seen as being grounded in phenomenological and perceptual concerns. Accordingly, the term 'combination' when used by Stein with reference to plays infers a subtly different meaning than when it is employed in discussion of writing. Stein is not overly concerned here with formation of acts from scenes; instead, the combination that Stein holds to be fundamental to plays is the relational one between the two entities of the stage and the audience.

It would seem, then, if this understanding of the term combination when used in that respect is accepted, that although Stein entitled her essay ‘Plays’, it is more accurate to see her concerns as being those of theatre and of theatricality in general. This therefore certainly runs counter to several of the existing arguments that posit that Stein was only interested in writing: Stein very obviously does still engage and experiment with language in her plays but significant attention is also given to the physical nature and phenomenological affect of theatre. At this point, then, it is both possible and worthwhile to rebut claims made that Stein was writing closet dramas. Puchner, in particular, uses the evidence of this linguistic engagement to suggest that Stein’s plays represent a distinct form of modernist closet drama, pieces that are ostensibly written for the stage but that bear no “instrumental relation to it” (‘Drama and Performance’ 293). Continuing that argument, Puchner goes on to describe Stein’s plays as being each an “autonomous piece of dramatic literature” that has to be “adapted for stage if it is to be performed at all” (297). This argument, however, whilst having a certain appeal in its attempt to consider both stage and page, still sees Puchner persistent in his opposition to the notion that Stein conceived of her plays, fundamentally, as performance pieces. That there is a lack of stage directions within the play texts is true, but it does not necessarily imply that which Puchner suggests that it does. Instead, as Bowers, who in contrast strongly rejects the notion of the plays being closet dramas, has observed, Stein had little interest in the actual details of production, “happily deferring to the collective judgement of producers, set designers, composers . . . ” (‘The Composition That All the World Can See’ 131). It could, therefore, equally be claimed that the absence of clear instruction as to a play’s staging is less an attempt to critically refuse performance and more an indication of the manner in which Stein envisaged collaborations.

The argument that Stein's plays are firmly affixed to the page upon which their texts are printed can be further refuted by a continued exploration of Stein's conception of 'landscape' as well as of the play *They Weighed Weighed-Layed*. Written in 1930, *They Weighed* was not favourably received by Stein's friend and musical collaborator Virgil Thomson, who referred to it in a correspondence as "one of those stark ugly little stories" ('To Gertrude Stein' 182), but it does, nonetheless, clearly illustrate Stein's interest in the physicality of the medium. In the complexity of its patterned and shifting inter-character relations *They Weighed* stands in stark contradiction to claims of Stein's plays as being texts not suitable for the stage: it is, this chapter will proceed to argue, a stage play that it ill-suited to the page; it is openly and intrinsically theatrical in nature.

3.2 The necessity of performance: problems and possibilities

If the problem of differing times within the theatre preoccupies Stein throughout the first half of 'Plays' then the second half can be seen to be oriented around the issue of acquaintance and the outlining of her solution to these through the idea of the play as a landscape. It is through the discussion of characters within traditional plays that Stein introduces the notion of acquaintance as one of theatre's difficult aspects. This difficulty is namely that the plays she attended required her to become acquainted with characters played by actors who are "there when they are there and they are there right away" (69); this was, for her, troubling in that it led to the syncopation of emotional times. Whereas the act of reading a play as a text allows at any time for a return to the initial character list, experiencing a play's performance precludes, according to Stein, immediate familiarity with the characters on stage and thus also synchronicity of emotion.

Stein first started to arrive at a solution to this theatrical dilemma whilst she was staying at Bilignin, in the French countryside. Stein felt that the landscape of the area made a play and that "if a play was exactly like a landscape then there would be no difficulty about the emotion of the person looking on at the play being behind or ahead of the play because the landscape does not have to make an acquaintance" (77). The conceptual value of the landscape as something defined by its spatiality and the relations between its constituent components for Stein was that, as Linda Voris posits in her article comparing Stein's dramatic work to Cezanne, it was "*simply there*" and so, therefore, an observer can be understood, equally, as simply being "co-present with it" (73). Instead of there being two differing 'times', there is, therefore, only the single time of being in the landscape. Adopting, then, the notion of the landscape as a "homology for the composition of a play" (Voris 73), Stein claims in 'Plays' that "a play has to have formation and be in relation one thing to the other thing and . . . the story is not the thing" (78).

This emphasis upon relational formation within performance as opposed to plot development is remarkably manifest in *They Weighed*; particularly so through the manner in which the characters deliver their lines. There are six main characters within the play, and various consecutively numbered 'versions' of each of these: Marcel (I and II); Bernard (I, II, and III); Eugene (I, II, III, and IV); Marguerite (I, II, III, IV, and V); Leon (I, II, III, IV, V, VI, and VII); and, finally, Maurice (I, II, III, IV, V, VI, VII, and VIII). Each of these characters speak either on their own, or in a pair, or else with two other characters. It is possible to analyse the order in which the characters speak and to identify certain patterns, for instance: each character 'ascends' upwards through their numerical hierarchy many more times than they descend; with only a few exceptions 'ascents' are always done fully and in increments of one whilst a 'descent' returns in one step to the version with the

lowest number. The first scene of Act II, for example, consists almost entirely of characters grouped together in trios, ascending numerically, and then shifting across to the left of the page when one of them reaches their numerical limit:

> Bernard III Marguerite II Leon I
>
> By politeness they sing to me.
>
> Marguerite III Leon II Maurice I
>
> Just why they have to ask that they will by the time they are themselves almost at once.
>
> Marguerite IV Leon III Maurice II
>
> Should choices be left to other ones which they mean. (237)

In this manner, therefore, a dedicated *reader* of the text might be able to draw out some of the sequences and patterns involved. Unless such a reader were exceptionally spatially minded, however, it is unlikely that they would be able to actually visualise the play itself. *They Weighed* is a play that depends very much upon its spatial formation and temporal dimension; as Ulla Dydo states, it "dismantles both proper names and common nouns by sound, sight, and sense" (445). The questioning that the play carries out is presented not solely through the content of the lines themselves, such as "We are here. / In refusing mingling separation" (231) or "They come together. / And they sing. / All the names are included in the song" (243), but also through the manner in which these utterances pertain to the physical situation within a theatre.

The necessity of the combination of both the auditory and the visual, as well as 'sense' (used to denote, here, 'meaning' rather than 'sense perception'), to *They Weighed* also acts as a good indicator as to how the fundamental qualities of theatre as a medium were not ignored by Stein. The theatrical space, both the stage and the auditorium, are important constituent elements of Stein's play and, as Marianne DeKoven writes in reference to Stein, that which accords drama a special significance is that it makes the relationship between space and time more

"tangibly manifest" than any other form of art (87). For this reason, then, any attempt to consider or engage with *They Weighed* in only its written form is necessarily problematic. Trying to describe the play verbally or graphically meets with confusion as there are at least twenty-nine characters, or versions of characters moving in and out of various groupings in a variety of orders: it is simply too complicated to depict this properly in anything other than four dimensions, and to do so is to deny an integral part of the play. The play is the performed, physical, landscape and a thing in itself. The play is not the written text, and thus Stein "undermin[es]", as Laura Schultz argues, "the idea of performance as an illustration of the text" (235) and makes, instead, the text only a shadow of the performance.

Thus far, the analysis in this chapter has primarily focused on the physical aspects of Stein's landscape plays and on establishing the necessity of understanding it as being something pointedly conceived of as existing in four dimensions; the emphasis up to this point has largely been on sight and the visual perception of a material space. It is crucial, though, to also acknowledge the other defining feature of Stein's theatre and one that forms just as much a part of the landscape: the performance of language within plays. In doing so, a clearer understanding of the possibilities as well as the problems that Stein's theatre creates, and the relevance of these to a re-conceptualised notion of the world picture can be attained. Accordingly, whilst the act of performing a play such as *They Weighed* certainly enables a focus on the verbal of the piece to an extent that would not be possible in a mere reading of the text, it does not entail a phenomenally straightforward theatrical experience. The language of *They Weighed*, and most of the other landscape plays, demonstrates the same fascination that Stein had with the fluidity of language that is evidenced in all of her other writings (Bowers, *"They Watch Me"* 3). Thinking about Stein's text as not just

words on paper to be read and studied but, instead, as language that is intended to be spoken aloud by an actor raises a unique set of questions about audience reception, the nature of understanding, and also the development of Stein's notion of the continuous present.

3.3 The importance of language in relation to physical concerns

The difficult relation of the aural to the visual, of the linguistic to the material, is one of the few aspects of Stein's theatre that has received a degree of critical attention, although its extent is still relatively limited in comparison to other areas of research on Stein. In her reading of 'Plays' and consideration of Stein's dramatic aesthetic, Bowers muses on this issue and suggests that part of Stein's experimentation with theatrical convention was driven by a tension between the demands exacted upon the audience by a play's visual and auditory components. Bowers, drawing on Stein's essay, contends that

> [c]ostumes, sets, and even action and gesture - the spatial or visual elements of performance - are available to our understanding all at once, in the moment that we perceive them. The language of the play, by contrast, proceeds linearly. . . . Stein felt that what she saw at the theater distracted her from what she heard. To be distracted from the words was to lose their sense. On the other hand, to concentrate on the words was to dilute the intensity of the visual effect. ('The Composition' 123)

This is in many respects an insightful and justified interpretation, by Bowers, of Stein's writing on the subject of theatre. Stein never explicitly discusses the actual position of language within plays but, given her decision to avoid the use of narrative and its attendant form of character within her writing for the stage, the notion that Stein was troubled by the differing temporalities of language and the material within traditional theatre seems plausible. Despite this, however, Bowers' suggestion that Stein was also concerned by the distraction of the visual causing a loss of the sense of words is less easily reconciled with Stein's own theatrical

praxes. The claim to have lost “the sense” of a word is, in itself, slightly ambiguous here: it is not entirely evident whether this “sense” is phenomenological, and that one’s physical perception of the spoken word was lessened in some manner, or whether it is the meaning of the word that has escaped. Given that Bowers, in her reading, then proceeds to use the oppositional pairing of “concentrate” and “dilute” to describe the alternative scenario of focusing on the language to the detriment of the visual element, it would seem, perhaps, that she is inferring a decreased value of meaning being drawn from the word when she talks of it losing its sense. In any case, the contention here is that Stein is in fact generally not concerned with ensuring that the words of her plays impart a sure and concrete meaning. That is not to say that her interest is in them losing their sense for the audience but rather that her lexical and syntactical choices open up language in a way that results in its performance being defined by its becoming paradoxically both more open and fluid in its potential meaning, but also more limited for the audience.

That Stein elected to write plays using language that abounds with puns and accents, homophones and homonyms, elisions and ellipses, is a clear indication of her interest in this element of the landscape play. Whilst, however, some forms of linguistic playfulness, such as the use of accents, are inherently rooted in au/orality, the crucial issue here is that literary devices such as homophones and homonyms function in a completely different manner on and off the page, having a strong visual element. When reading a written text it is possible, as Dana Watson notes, to see that Stein is playing upon the similar sounds of words, to take some time to work out what the intended effect might be, and to then incorporate this into the rest of the reading (113). To a considerable extent, however, such devices rely upon the *sight* of the written word as a fixed reference point; the reception of this kind of language when it is performed is, therefore, markedly different (Bowers,

"They Watch Me" 27). Consider the following utterance, again from *They Weighed*: "They will see no one near she can hear he was meant for four they will have it as a change for their then without men" (232). Spoken by 'Marcel II Maurice IV', this line has the potential, when performed, to be perceived in a variety of ways. There is, most immediately, the homophonic play upon 'four' and 'for', and 'their' and 'they're'; also, 'no one near' might just as readily heard as 'no one ere'. All of these meanings exist as potentialities when pronounced but, in the process of performance, only one can be consciously experienced in the instant. In this manner it can begin to be seen how the language of Stein's plays is necessarily connected to, and to an extent even determined by, the material limitations of the humans involved on stage and in the audience, becoming in a sense performative in itself. This would certainly be in accordance with Stein's statement in 'Plays' that in "the poetry of plays words are more lively words than in any other kind of poetry" (70).

This complex interdependence of language and material presence within Stein's landscape plays is usefully considered, too, by both Heidi Bean and Johanna Frank. In her essay on Stein, performativity, and hypermediated theatre, Bean argues that Stein focuses on language at the expense of spectacle but she also holds that this is not indicative of an anti-theatrical prejudice (172); she expands on this to posit that what Stein's plays work to effectively demonstrate is that her

> reconceptualization of theatricality locates the action of theater in the liveliness of non-narrative, multivocal, exuberant language sounded in performance and presented in interaction with the physical bodies that are doing the sounding. (172)

In Bean's reading, then, as in the earlier analyses of the space of theatre, the notion of relationality is seen as underpinning Stein's thinking about the theatre; in this case it is between the words of the play and the actors and, as with the bodies themselves on stage, it is the connection between them that is of most importance.

Frank, for the most part, agrees with Bean's assessment but, significantly, in her own essay she expands the focus in order to consider not just the relation between language and those pronouncing it but also between the bodies of the speakers and the auditors within the space of the theatre. "The anticipated corporeal and ephemeral relationship" between these two sets of bodies, Frank suggests, is that which "differentiates Stein's drama from her text-bound words" (501-502).

The tension that exists between the bodies and the language of Stein's theatre is therefore to be seen as one of the important constituent parts of the landscape play. Just as Samuel Weber argues, in *Theatricality as Medium*, that, rather than "reducing the materiality and corporeality of the theatre", language can instead be seen to mark "their irreducibility" (x), Stein also conceives of theatrical praxis as a means to make centrally manifest the intractable presence of the human body in its relation to voice and language. Stein's theatre also, however, whilst negating the problems of experiential disjunction that she found in traditional forms, highlights the limitations imposed upon our comprehension and knowledge by embodied phenomenological perception. Grounded in the non-teleological relation between characters and performative language whose "liveliness" is simultaneously both increased and delimited by the materiality of its production, the stage of Stein's landscape plays is a site that is critically determined by both epistemological and ontological concerns.

In establishing these concerns inherent to Stein's re-conceptualization of theatricality, the aim at this point is not, however, to simply illustrate Stein's understanding of the phenomenology of the theatre. Instead, the intention of this chapter is now to further examine how the premise of the landscape play as a form represents a shift in the manner in which science and theatre position themselves in relation to one another within the new paradigm that emerged over the course of

the Modernist period. Having so far approached Stein's theatre in relatively general terms, through close readings of her theoretical essay and brief examinations of selected plays, an extended analysis of *Doctor Faustus*, a play for which it will be argued that the concerns of the content match the concerns of its experience, now suggests itself in order to address these questions.

4.0 *Doctor Faustus Lights the Lights*: revising tragedy and the legend of science

4.1 The attraction of Faust

As its title suggests, Stein's *Doctor Faustus* is an engagement with the pre-existing Germanic Faust legend: a story notably represented on stage in the form of a tragedy by Christopher Marlowe's *Doctor Faustus* (1592), and by Johann Wolfgang von Goethe's *Faust* (1831). The significance of this relatively anomalous decision on the part of Stein to openly refer back to older models of both tragedy and theatre is noted by Sarah Posman in her own recent analysis of the play. Posman argues that it is a failing of the few existing studies of *Doctor Faustus* that they generally read it as "an ingeniously crafted language play that sets free 'a primitive power'" rather than in dialogue with the work of Marlowe and Goethe (183). Whilst the language of Stein's play is indeed typically clever, as Posman also admits, her primary point is astute and one worth working with here. Whereas, however, Posman in her study reads *Doctor Faustus* in relation to Goethe and Marlowe mainly for the reason of simply arguing that Stein's play is a form of lively interaction with them, the focus in this instance will instead be on examining the play as Stein's attempt to think through an apparent climax in a form of Western thinking that traces its way back through the earlier iterations of the story. As one of the central concerns of the Faust story has always been the issue of knowledge and the manner in which it is obtained, the contention here is to be that Stein's

interest is in reimagining this in accordance with contemporary epistemological problems within science whilst highlighting a sense of historical awareness. In an article entitled 'Whistling in the Dark', David Savran touches upon a similar idea when he suggests that

> [u]nlike Marlowe's *Doctor Faustus*, which focuses on the conflict between the religious and the secular, the sacral knowledge of the Middle Ages, and the emergent scientism of the Renaissance, *Doctor Faustus Lights the Lights* dramatizes a crisis in Western rationalism (that is, in the Enlightenment project). (25)

It is interesting that Savran does not here also make reference to Goethe's play as one written at the latter end of the Enlightenment period and one that, especially according to Posman's reading, engages with a tension between Enlightenment thinking and Romantic idealism, if perhaps not yet a crisis within the former. Goethe's *Faust* arguably has a more significant relation to Stein's play than Marlowe's version does in terms of its concerns and its structure but, at the same time, the interest that this analysis takes is less in the discovery of similarity than in the explication of critical differences between Stein's iteration of the play and the ones that preceded it.

Stein's reworking of the Faust story displays an awareness of, and connection to, the tradition upon which it builds; it also maintains a form of the critique of the nature of progress and enlightenment that is present within the earlier versions. It is significantly, however, also a "radical reading" of tragedy (Taxidou, *Modernism and Performance*, 79), a radicalism that might well be expected from a writer that Marranca describes as having been interested in "the miraculous not the tragic" (XVII). The pertinence of this engagement with "that most classical of genres" (Taxidou, *Modernism and Performance* 79) within the context of this study is that it relates closely to the ideas expounded by Nietzsche in *The Birth of Tragedy* and then both picked up and taken further by Heidegger. That which Stein achieves through her reimagining and revision of the Faust legend is the combination of both

her ideas about theatricality and the nature of scientific claims to knowledge of reality, as well as an exemplification of the situation that Nietzsche describes for the moment when a peripheral point on the circle of science is reached.

4.2 Doctor Faustus and a light that does not illuminate

Doctor Faustus (also referred to as simply 'Faust') is the play's eponymous character. For a figure traditionally associated with learning and knowledge, if also questionable moral values, Stein's Faust by contrast is instead largely determined by his own uncertainty, both epistemological and ontological. The play opens with Faust having already attained the ability to create electric lights, the initial dialogue and bargaining with the Mephistopheles figure present within earlier iterations of the story are omitted from Stein's version, and he is positioned from the start as complex figure whose identity is obfuscated, not clarified, through brilliance and illumination.

Strikingly depicted by Stein in the written text, the opening of the play describes "Faust standing at the door of his room, with his arms up at the door lintel looking out, behind him a blaze of electric light" (89). This is a powerful image even in its purely verbal manifestation; indeed, the strength of the visual created by Stein might best be understood as exemplifying a form of *ekphrasis*. Whilst, however, this opening as it is written is undoubtedly bold, in its performance there is scope for the creation of significant ambiguity. That Faust is standing in his doorway with his arms stretched above his head to the lintel is clearly stated but that, in addition to that fact there is brilliant electric lighting behind him, is the only thing that Stein specifies. For a scene as vivid as this one, it is both notable that Stein plays upon the limitations of sight here and also significant that the resultant affect is confusion. Positioning the actor playing Faust before a mass of dazzling lights

would surely have the result of rendering his appearance to the audience as being a mere silhouette or outline, a humanoid eclipse of the electric lighting. In thus rendering the figure of Faust essentially as one without perceivable depth or meaningful dimension Stein establishes at the outset one of the central issues of her play. As a mere shadow in this opening scene, Faust could simultaneously be seen to be either looking forward or looking backwards: the lights of his innovation serve to both clearly delineate him but also to remove certainty of knowledge as to the nature of his existence, effectively highlighting an absence of perceivable information. In framing Faust in such a manner that the act of his looking forward lends itself to also being perceived as its antithesis, Stein draws into contention the very idea of progress, paralysing it in a state of indeterminacy that enforced by the critical role of sight within theatre.

Considering this in relation to the ways in which *Doctor Faustus* engages with and reworks the story from which it draws its theme, Savran's contention that the play evidences a significant critical shift in terms of the problem at the heart of the story is of interest. Savran's argument is that in the play Stein's concern is with the question of being rather than of knowledge and he suggests that

> Stein's Modernist derision for the Enlightenment project thus signals a decisive shift in the treatment of the Faustus legend: epistemology gives way to ontology as the primary concern of Stein's Faustian speculation. The structure, status and limits of knowledge provide only the background for Stein's primary enterprise, the fierce contestation of the very being of the subject . . . . (26)

This is an insightful reading insofar as it highlights a tension between epistemological and ontological concerns in Stein's play and in earlier versions. The notion, however, that ontology has replaced epistemology at the heart of the play is more contentious and the view to be advocated in this chapter is, instead, that Stein fuses the two together and forms an onto-epistemological concern to drive her drama. It is arguable, too, that even in the earlier adaptations of the

legend the issue is always twofold as it is not only the knowledge that Faust gains that is examined but also the moral price that he pays for this. *Doctor Faustus* does evince scepticism, if perhaps not total “derision”, toward the progress of Enlightenment thinking but the crux of Stein’s reworking of the Faust story is that this critique of a certain mode of thought and learning operates in a manner in which epistemology and ontology are intrinsically connected.

Accordingly, the opening scene therefore foreshadows another of the main concerns of the play: remarkable achievements and illumination have been achieved and yet the effect that they have upon human subjects is to confuse both their own sense of identity and their understanding of what it is that they can know. Whilst the electric lights that Faust has created have indeed banished the previous gloom, and established a new general means of seeing, it is not possible to say that they have aided understanding rather than simply demanding further contemplation. “What do I care there is no here nor there. What am I.” (89) Faust asks early on in the play, expressing an anxiety about the most fundamental aspect of his identity. Continuing to speak, Faust responds immediately to his own question, proclaiming “I am Doctor Faustus who knows everything” (89); this apparent surety, however, belies a crisis in his knowledge of the self. Asking *what* you are is crucially different from asking *who* you are and it is, as Savran might observe, a more ontologically focused question in many respects. Faust, as we hear, is in no doubt as to who he is: he appears fully cognisant of his name and his reputation. At the start of the play, however, he appears to less than sure about some other aspect of himself. In raising this question at the start, Stein’s critical interest might be viewed as being the relation between the ‘who’ and the ‘what’ of the characters on the stage.

Distinguishing between the ‘who’ and the ‘what’ in this manner, Stein reframes the questions of the preceding engagements with Faust. Whereas previously the denouement had hinged to a certain extent upon the fate of Faust’s soul, a component whose existence was never really doubted, Stein’s engagement with the story removes this teleological narrative arc. The notion of ‘who’ can be understood to an extent to connect, in its connotations and received usage, to the idea of a soul, or an immaterial facet of the self, but Stein goes further than to simply change terminology. Bringing into view a dissonance between ‘who’ and ‘what’, and the latter can be held to refer to the materiality of the character, Stein forces a consideration of their relation as well as also making the performative nature of her theatrical landscape a significant factor in how these ideas are explored.

Stein’s conception of the landscape play complicates the idea of dramatic character in that it replaces the traditional model of actors *representing* a certain character with, instead, the much more conceptually complex praxis of the actor *being* a part of the relational landscape of the play (Taxidou, *Modernism and Performance* 97). In this sense, these two distinct issues converge in the character of Faust, resulting in a situation in which, somewhat ironically, he has no real unity despite the appearance that he presents (Bay-Cheng 89). Embodying the principles of Western rationalism, Stein’s Faust is struggling with a crisis of identity that he is not fully able to correctly diagnose or reconcile. Faust’s statement that “[t]here is no here nor there” lays the foundation for understanding the problem that underpins the play and also, arguably, the landscape play in general: that there is no truly independent, individual, monadic subject. The notion that is effected is therefore one that moves towards a tragic realisation of a paradoxical unity, Faust’s observation connecting well, here, with Weber’s reading of the notion of

‘Verwandlung’, or ‘transformation’, in Nietzsche’s *The Birth of Tragedy*: “To be alive cannot be understood in terms of spatial identity: being 'here' as opposed to being 'there' or 'gone', since the individual caught up in the movement of *Verwandlung* is no longer simply here, but here *and* there at once” (41). A representational character within another form of theatre might well be able to operate in terms of being ‘here’ in distinction to another character being ‘there’; in the landscape play, however, the identity of character (in so far as it is present) exists in the interstitial space of relation and therefore challenges the notion of a spatial specificity.

Faust’s questioning of the subjective perception of space and dimension in favour of a single, complex, system or unity also has certain resonances with the notion of complementarity within quantum mechanics that describes the “fundamental limitation . . . of the objective existence of phenomena independent of the means of their observation” (Bohr, ‘Light and Life’ 7). In this light, Faust’s appearance as a silhouette looking out upon the world and his uncertainty as to what he is attains further significance. A figure of Enlightenment thinking, Faust adopts the position of the isolated observer, the objective scientist, only to discover that he has taken himself to a point at which the validity of that very position must be thrown into doubt. In a play in which, further to the general requirements of Stein’s landscape theatre, the majority of characters are multiple or else combined in some way, Faustus struggles to remain resolutely individual and at one point resorts to crying out:

> Leave me alone
> Let me be alone
>
> Little boy and dog let me be alone, Marguerite Ida and Helena Annabel let me be alone . . . . (100)

Naturally, on stage as a component of Stein’s theatrical landscape Faust’s inability to be truly left alone is rendered obvious in a strongly phenomenological manner: as the audience can perceive, regardless of whether or not Faust is speaking he

exists as a material body within part of the dramatic formation. Just as the idea emerged in physics that it was longer going to be possible to continue to maintain the view of the scientist as a detached and objective observer and measurer, Faustus seemingly seeks an isolated individuality that is not in fact available. Accordingly, returning to the question “What am I”, Stein has Faust questioning his own materiality and attempting to reconcile it with his immaterial sense of self and his position in relation to others.

4.3 Seeing Marguerite Ida and Helena Annabel

In contrast to Faustus, the character of Marguerite Ida and Helena Annabel expresses a different crisis in terms of her understanding of her own subjectivity and identity. Whilst Faustus wishes to know what he is, Marguerite Ida and Helena Annabel enters with a seemingly greater sense of assurance: “I am I and my name is Marguerite Ida and Helena Annabel” (95) is one of her earliest pronouncements. On the one hand this is an affirmative declaration, “I am I” in itself draws no immediate distinction between ‘who’ and ‘what’ and in this manner Stein grants Marguerite Ida and Helena Annabel more certainty than she does Faustus. On the other hand, though, after having stated simply her ontological status, Marguerite Ida and Helena Annabel’s provision of her name brings to the fore other complexities. The conjoined names of ‘Marguerite Ida’ and ‘Helena Annabel’, with a possibly paratactic use of the conjunctive “and”, immediately problematises how an audience might understand the character as well as how she might figure on the stage, speaking, as Posman observes, “in both a single and a double voice” (191).

It is in fact through the character of Marguerite Ida and Helena Annabel, and not Faust as in traditional versions, that Stein introduces a form of intellectual curiosity

into the dialogue of the play. Shortly after her announcement that “I am I”, Marguerite Ida and Helena Annabel starts to question the nature of her knowledge:

> And I am I and I am here and how do I know how wild the wild world is . . . how do I know how wild woods are when I have never seen a wood before.
>
> I wish . . . I knew why woods are wild why animals are wild why I am I . . . (95)

Again, she reaffirms her sense of subjectivity and does so partly by acknowledging embodied positioning within a “here” (she does not at this point deal in terms of ‘here and there’ just as Faustus also found that he had to); however, Marguerite Ida and Helena Annabel also professes to a certain lack of knowledge as well questioning that which she does appear to know. In asking how she knows about the nature of woods when she has “never seen a wood before” Marguerite Ida and Helena Annabel displays a degree of scepticism toward *a priori* knowledge that is, however, left largely unaddressed within the play; more interesting, though, is the query as to “why I am I”. Differing in this respect, then, from Faust, Marguerite Ida and Helena Annabel evidences a different form of onto-epistemological confusion in that she knows who/what she is but she does not know *why*. This is interesting in terms of the performative nature of the play for, whereas Faust appears in some respects as a supposed individual, Marguerite Ida and Helena Annabel is more evidently a fractured, or a composite, character; her name is an aggregate of female characters from previous versions of Faust as well as from Stein’s own literary corpus. Thinking then of the importance of phenomenology to Stein’s theatre it can be noted that Marguerite Ida and Helena Annabel seems to require two (or more, as in the case of Robert Wilson’s 1992 production) actors to be performed; consequently the complicatedly united multiplicity that constitutes Marguerite Ida and Helena Annabel will be physically visible: the ‘what’ she is, she is right, is evident, but why this case is not so clear.

Questions of visibility and perception preoccupy Stein throughout *Doctor Faustus*, and this interest is most explicitly apparent through the interactions between the characters of Marguerite Ida and Helena Annabel and Faust. In a play full of different kinds of illumination it is striking that Faust is apparently quite unable to view Marguerite Ida and Helena Annabel: “you say you are Marguerite Ida and Helena Annabel and I I cannot see I cannot see Marguerite Ida and I cannot see Helena Annabel and you you are the two and I cannot cannot see you” (101). Intriguing on its own, this puzzling inability to see is further compounded by the privileging of aural perception in this same regard: Faust first knows of Marguerite Ida and Helena Annabel’s presence because he “hear[s] her” (94). The denial of the material presence of Marguerite Ida and Helena Annabel by Faust can be understood as perhaps one of the main tragic tensions of the play, as the failure of a mode of seeing and as an inability of a traditional rationality to properly operate in the world that it has newly illuminated.

It is sight and observation that Stein positions as being the main enabler of knowledge within the play but she balances this by also presenting it as a limiting factor: Faustus’ electrically-aided vision existing as another form of *pharmakon*. There is a slight implication within *Doctor Faustus* that the appearance of Marguerite Ida and Helena Annabel as she is connected to the lighting of the lights, for she enters as the lights grow brighter and a chorus sings whereas with “her back to the sun . . . she is one” (107). If by a more natural light Marguerite Ida and Helena Annabel’s fractured identity is not apparent then is it only due to his invention of the electric lights that Faust finds her a visual problem? Marguerite Ida and Helena Annabel is simultaneously both parts of her name but Faust cannot allow for this binary; he must see either one or the other. As such the chorus is right in stating that he cannot “cure” her if he cannot see her but it might also be

read that he cannot see her because that would not cure her. Just as in Schrödinger's famous illustration of the problems of quantum superpositions the cat exists as simultaneously both dead or alive until the box is opened and inspected by the experimenter, so too it seems that Faust can hear Marguerite Ida and Helena Annabel, or possibly see her as either Marguerite Ida or Helena Annabel, but not as both. The act of Faust 'seeing' Marguerite Ida and Helena Annabel would therefore be in its own way a form of *pharmakon:* it might resolve or cure the paradox of her identity but at the cost of also negating it.

Struggling not only to persist as an objective observer in a setting in which everything is relationally interconnected, but to also make sense of the existential situation that he himself has helped to define, Faust's encounter with Marguerite Ida and Helena Annabel embodies the failure of certain form of Enlightened rationalism to be able to view and describe the world as it had done previously. Stein challenges the notion of a 'scientific' form of seeing as much as she also engages with the idea of the idea of theatre as a place of seeing, or a *theatron*. In a manner similar to that by which physicists at the beginning of the twentieth century came to believe that models that had carried them up to that point were no longer fully able to accurately describe and measure the observable universe, Stein's Faust is brought to a point at which he can only question his own knowledge, his 'scientific sight' no longer what it once was.

Stein's idiosyncratic reimagining of the theatre/*theatron*, as per the dictates of the landscape play and the concerns of *Doctor Faustus*, is also of also interest, however, in considering how the question of the tragic has been conceived of here. There is certainly much of the play that is spectacle, a precedent set from the opening with the doorway scene, but Stein's audience is made peculiarly aware of the limits of the visual and, even, the material throughout the play's duration. On

stage, characters struggle with sight and with language; in the audience there may be no nervousness due to a disjunction between emotional times, but there is a forced recognition of the difficult relation between material and the immaterial facets of human identity. Stein's stage in *Doctor Faustus*, as in all her other plays, is one that is emphatically theatrical; her theatre is one of sight and also of sound, but its real value lies in the fact that it affectively expresses the notion that the totality of our perceptions is inherently limited. Within the play itself Faust is confronted with both his inability to observe and with the inefficacy of his language and logic to make sense of the totality of the landscape; the theatricality of the piece as a whole impresses much the same upon the audience and the actors. Stein's playful language cannot have a presence in the theatre without the bodies that will deliver it but there is also a limit to the manner in which people as physical entities are able speak and to hear language as it is used in these landscape plays: you cannot pronounce the essence of homophones or homonyms; you cannot simultaneously hear two meanings. A striking achievement of Stein's theatre, and the object of *Doctor Faustus*, is the performance of a reflection upon the nature of science and its limits: the critical demonstration of both the persistence and irreducibility of the Dionysian, and of the scientific becoming theatrical.

5.0 Physics, theatre, and society in the twentieth century

By way of a conclusion and a moving-on, it is worthwhile to note that one of the last pieces written by Stein before her death in 1946 was a short article entitled 'Reflections on the Atomic Bomb'. Taking a stance that is at odds with many major figures in the aftermath of World War II and use of atomic weapons upon the cities of Hiroshima and Nagasaki, Stein claims at the outset that she had "not been able to take any interest" in the atomic bomb (179). This, she says, is because it the

people that are living that are interesting and “not the way of killing them” (179). Regardless of the finer points of that view, in terms of the various ethical problems contained within it, it does serve to emphasise the fact that for Stein both physics, science in general, and theatre were primarily of interest insofar as they concerned questions of knowledge and identity in terms of relationship to the universe, or landscape, that people perceive themselves within. By using the theatricality of her landscape plays to express the crisis in the physical world picture, and in so doing granting theatre a new autonomy and independence, Stein was able to explore new possibilities in thinking about consciousness and identity within a less absolute nature. The role and significance of either the new physics or of theatre in terms of what it might say about, or offer, society was not, however, a particular concern for Stein, as is also evidenced to an extent by the nature of her adaptation of the Faust myth. *Doctor Faustus,* as a reworking of a much older science play also establishes a clear early precedent for thinking about the effect that developments within scientific knowledge and its world picture might have on the society within which they occur. Whilst this is not something that is taken up by Stein in her thinking about theatre and science it does, however, assume an important role that of another important Modernist playwright: Brecht.

Chapter Three

A Need to Engage: Bertolt Brecht's Theatre of the Scientific Age

> In the old days there was no more need for the artist to bother about science than for science to concern itself with him. But now he has to, for science has progressed so much further. (Brecht, 'Interview with an Exile', 67)

This is one of Brecht's earliest comments on the subject of science in relation to his work: he was speaking in 1934 whilst living in Denmark, having fled Germany the previous year following Hitler's rise to power. The scene of his exile would change another four times over the course of the fifteen years that passed before Brecht returned to what was by then East Germany, but his belief in the need to "bother about science" remained constant. In 1941, Brecht arrived in the United States and when, in March 1942, Hans Reichenbach, a fellow émigré and founding member of the Society for Empirical Philosophy (also known as the Berlin Circle), delivered a lecture at the University of California Los Angeles on the subject of determinism in physics Brecht, true to his word, was in attendance. Immediately following that lecture, Brecht composed an entry in his journal, expressing his positive regard for the description of the world provided by physics. In the same rough, concise, style that distinguishes the vast majority of his journal entries, Brecht states: "i like the world of the physicists. men change it, and then it looks astonishing" (*Journals* 209). Coming from one who wrote a play about Galileo, planned a subsequent work about Einstein, and would define his theatre as being "one of the scientific age" (*Messingkauf* 124), this is a telling remark. That Brecht had an abiding interest in both the social and the philosophical entailments of the revolutionary developments occurring within physics at the time has been astutely noted by Stephen Parker in his recent biography of the playwright (392); the complex nature

of this interest, particularly as to why it existed, has, however, been left largely unconsidered.

In order to begin to address this in more detail, it must first be clarified that when Brecht writes of “the world of the physicists” he is referring to the situation within physics at that historical moment. To be more precise, it is nature as presented by quantum theorists that is the particular object of his enthusiasm; nature that, at a certain level, appears not to behave in accordance with classical laws of local causality and whose accurate measurement presents seemingly unsurpassable problems. Brecht’s particular interest in this clearly predates 1942, the playwright having been in communication with a number of Bohr’s assistants whilst living in Denmark and writing *Galileo* (Anne Moss 136), but the anecdotal value of his attendance at Reichenbach’s lecture is that it encapsulates many of the issues that underpin the relationship between physics and Brecht’s thought. Not only does the subject of the lecture highlight the renewed closeness of physics and philosophy at that point, and indeed one of Reichenbach’s most notable works is *Philosophic Foundations of Quantum Mechanics* (1944), but Brecht’s response invokes the same notions of change and astonishing appearance that are frequently employed when writing about his theatre or thoughts on society. It is on this level that the nature of the relationship between theoretical physics and Brecht’s own theatrical theory and praxis can start to be established.

The notion of a socially-engaged theatre with the capacity to prompt deviation from the standard order of things certainly occupies an important position within Brecht’s thought. As a playwright particularly involved in also developing “new ways of understanding and new ways of making theatre” (David Barnett 1), common to many of Brecht’s writings is an evident critical interest in creating a theatre that had a socio-political role capable of making social reality “accessible to reason and

therefore changeable" (Robert Leach 2). In this respect, the influence of dialectical materialism and Marxist philosophy upon Brecht's thinking was significant, but he was also a theatre-maker often preoccupied with the dynamics of materiality and observation on stage and in the auditorium. Brecht's interest in the development of Epic theatre was, therefore, not just the position of theatre within society but also the way in which that same theatre exists and operates as a physical experience, staged by actors and observed by spectators. Beneath the wider debates of determinism and causality, there was a similar concern within the field of quantum mechanics as to the nature of scientific observation and its relation to knowledge. It was this issue that Brecht engaged with most constructively in his radical reformulation of theatricality.

1.0 Science and scientism

Given the directness of Brecht's appeal to science it is difficult to discuss his work without also considering the related question of scientism, and so it is necessary at the outset to briefly outline the ways in which the two are to be seen to correspond to one another in his thought and practice. A useful, broad, definition of scientism is provided by Tom Sorell, who posits it to consist of "the belief that science, particularly natural science, is much the most valuable part of human learning . . . because it is much the most authoritative, or serious, or beneficial" (1). This belief is, in most instances, focused upon the idea of the methodology of the physical sciences as being the acme for the generation of knowledge (L. Sharma 70); one significant consequence of this is the attempt to incorporate that same methodology in other fields. For the social sciences this became a particularly contentious issue during the first half of the twentieth century: thinkers such as Friedrich Hayek began to interrogate the extent to which the methods of natural

science, developed at the start of the Enlightenment, could really be said to provide "understanding of social phenomena" (268). The argument that Hayek makes against scientism in that regard is that it is naive in its assumption that society can be viewed in the same manner as the material world. Natural science is focused upon addressing the question of objects, Hayek argues, but society is ultimately constituted not of objects but, rather, of "concepts and ideas held by people" (283) and different laws must be seen to pertain to those.

To an extent, Hayek's argument is, therefore, effectively grounded within the same broad debate that was explored in Chapter One, in that it shares a similar underlying concern: the question as to what is, and what is not, within the scope of modern science. Although he considers scientism primarily in terms of the effect that the paradigmatic status of natural science within Western culture has had upon the study of society, Hayek also alludes to the broader debate physics and metaphysics, science and philosophy, that characterised not only the seventeenth-century revolution in thought but also its prehistory (270). Just as it was within Plato's writing, the problem considered by Hayek is as much political as it is epistemological: the question, on one level, is as to how best to understand and govern society. Similarly to Heisenberg and Heidegger, though, Hayek does not engage to any real extent with the issue of theatre, or even of art more general; equally, however, neither does he make any claim to position it within the purview of his study. There are, then, a number of reasons as to why this conception of scientism is of interest here: firstly, it provides another iteration of the idea that modern science has certain fundamental limitations; secondly, it foregrounds concerns about what parallels can be drawn between societal relations and natural phenomena; and, finally, it opens up the discussion as to the ways in which science and its influence can be critically addressed within society.

Brecht's Epic theatre makes a direct intervention into that debate on all three of those points; the exact stance that it adopts is, however, still the subject of much critical discussion. When, for example, Brecht calls upon actors to perform specifically for "an audience of the scientific age" by demonstrating knowledge of "human relations, of human behaviour, of human capacities" ('A Dialogue About Acting' 26), is his proposal scientistic? Sue-Ellen Case argues to the affirmative and claims that Brecht's method of acting is one that is, in its approach to character, "solidly on the side of scientism" (573). For Case, however, this is not necessarily a negative quality and, although she views Brecht's performance theories to now be "dated" (577), she does not turn his perceived invocation of science against him. On the other hand, that is precisely what Eric Bentley does when he takes issue with Brecht's criticism of other forms of contemporary theatre as being overly concerned with staging artists' subjective worlds: Bentley, who knew Brecht and for most part champions his work, accuses him of vaunting Epic theatre by "parroting the claptrap of scientism" (46). Both responses are problematic in their own way for whilst Bentley is perhaps overly derisive in his dismissal of "claptrap" Case's notion of a solid allegiance between Brecht's aesthetic and scientism is equally reductive. What is to be argued here is that Brecht neither parrots nor takes sides uncritically, and that Epic theatre is as much a corrective or counterbalance to science's societal status as it is its proponent: Brecht undoubtedly conceives of his theatre in relation to the notion of modernity as being "the scientific age" but he does not view it as being, in itself, a science. Indeed, he is quite clear on that point: when the interlocutor in 'A Dialogue About Acting' asks "Are we to see science in the theatre then?" the response is an emphatic "No. Theatre." (27).

To more fully explore how Brecht negotiates that issue when he makes references to science, and particularly to physics, this chapter argues that it needs to be emphasised that his interest was, first and foremost, in the ability of theatre, of theatricality, as a means to not only represent conditions but to effect changes to those and the processes that perpetuate them. That is, that whilst Brecht engages with physics and with the issue of scientism, he does not do so to the detriment of theatre's potential autonomy; rather, he holds them together in dialogue, effectively recognising that, due to their long and vexed relationship, changes in scientific paradigm necessarily have consequences for the conceptualisation of theatre. Brecht finds, therefore, in the language and ideas of twentieth-century physics a particularly powerful means by which to rethink the nature of theatrical performance; not to make his Epic theatre scientific but to make it capable of speculation about an age that is. As such, this chapter proposes that rather than considering Brecht primarily in relation to the idea of Marxism taken as a science (Barnett 18) his work is instead to be viewed in terms of H. Sheehan's claim that Marxism, in many ways, developed as a philosophy of science (1). To an extent, it must be acknowledged that ultimately those two positions cannot be held entirely separate from one another; it is only by according greater status to the latter here, however, that Brecht's notable engagement with physics can be better understood.

Brecht, this chapter is to argue, both admired and criticised the modern science that had emerged in the seventeenth century: he approved of what he understood to be a critical approach toward seeing things; he was not so impressed by the deterministic model that it implied, nor its claims to be aloof from other societal factors. Brecht was also, however, aware that he was writing during a period of great upheaval in science, and that the universe of twentieth-century physics was not the same as that of the seventeenth, or even the nineteenth, century (Patricia

Paulsell 272). The theatricality of Epic theatre, it is to be suggested, is informed on one level by the tensions between classical and quantum physics that Brecht brings together, a form of reflection sprung from the crisis in scientific observation: he invokes both Galileo and quantum mechanics in his theorising about theatre ('A Short Organum for the Theatre' 192; *Dialogues* 51). Bentley is not entirely wrong, therefore, when he claims that Brecht was preoccupied with the idea of scientific objectivity in artistic representation (47) but what he does not consider is the fact that Brecht was at the same time equally inspired by the challenge posed to that concept by quantum mechanics. Epic theatre both wants to show things as they are but, more fundamentally, in doing so it wants to change them. As such, the theatrical aesthetic that Brecht developed operates on two levels: it makes claims upon the same basic idea of Realism as classical physics but aspires to operate according to the principles of quantum mechanics.

There is, undeniably, a certain crudeness involved in speaking of quantum mechanical behaviour outside of its specific context but in doing so here the aim is primarily to introduce the argument that that is not what Brecht sought to do. In engaging with physics he was not necessarily trying to mimic its methods but, rather, looking to find ideas and problems whose consideration could provide a means to think about theatre and theatricality in new ways. Whilst it might not be possible to hold Brecht to be entirely innocent of scientism it is to be argued in this instance that that was, at any rate, not his aim: he recognised the status of science within modernity but his interest was in thinking about theatre's potential in relation to that paradigm, rather than in accordance to it. As such, in examining the ways in which Brecht did that, the aims of this chapter are twofold. First, it will analyse how the theatrical qualities involved in the performance of two key components of Epic theatre, gestus and the *Verfremdungseffect* (V-effect), can be seen to respond to a

question posed in *Messingkauf* during a consideration of new findings in physics. The focus in this first section will be upon the way in which Brecht conceptualises not only the performing body but also, crucially, the role of the equally embodied spectator within the theatre. In setting out how the spectator is reimagined within Epic theatre, the argument will mainly consider a range of Brecht's theoretical writings but it will also hold him in dialogue with his friend and contemporary Benjamin. Following that, the second major aim of this chapter is to analyse more broadly the ways in both twentieth-century physics and modern science in general are figured within Brecht's writing. Conducting a close reading of *Life of Galileo* in conjunction with the fragments that exist of *Einstein*, it will be argued that Brecht's play provides, in addition to a fascinating study of modern science, an exemplification of the fact he viewed his theatre not as being scientistic but as being theatrical. Epic theatre, in claiming to be one for the scientific age, does not position itself under the aegis of science but, rather, alongside it, as a complementary and autonomous mode of thinking.

2.0 Epic theatre: the new art of being a spectator

It is a testament to the cultural influence of his work that the term 'Brechtian' has come to be used by some as a label for a certain form of theatre. Beyond the problems inherent to any simplification of complicated aesthetic into a stereotype, to attempt to concretise a singular notion as to the nature of Brecht's theatre is also, however, to ignore both the fact that his views on theatre changed significantly over the course of his life and that continuous development and revision were crucial elements of his work. Whilst Brecht's earliest plays, such as *Baal* (1923) or *Drums in the Night* (1926), were strongly influenced by German Expressionism (Michael Patterson 93) much of his of his subsequent work and

theoretical writing positions itself explicitly as a reaction against that same school. By 1939, Brecht was claiming that Expressionism had led to what he called “a special kind of solipsism” and that it had “vastly enriched the theatre’s means of expression” at the expense of theatre’s educative and interrogative potential (‘On Experimental Theatre’ 132). Such shifts in position are difficult to fully trace and explain because, as John White has noted, not only is Brecht’s theoretical oeuvre vast but its attendant criticism is often also coloured by the “polemical feuds” that were another significant, if not always related, aspect of his life and writing (24-25). To counter this difficulty, this chapter therefore ultimately centres its argument around one fundamental component of Brecht’s theatre: the spectator. As such, perhaps one of the most telling assessments of the difference between plays such as *Baal* and *The Caucasian Chalk Circle* (1948) is provided by Elizabeth Wright when she claims that “Brecht’s early plays *position the spectator differently* from the later ones” (98; italics added).

The figure of the spectator is a crucial one within Brecht’s theatrical aesthetic. Just as it was for Stein in her essay ‘Plays’, the intrinsic relationship between the stage and the audience in the theatre is at the heart of much of Brecht’s theorising and thoughts on theatricality. In a 1940 reflection upon his *Messingkauf* project, Brecht states that the theory set out in the piece “deals with the traffic between stage and auditorium, [and] how the spectator must master the incidents on the stage” (*Journals* 81); he then posits that a true transformation in theatre could “only be brought about by changing the nature of the traffic” (81). The notion that Brecht puts forward here, namely that those watching a play must ‘master’ the events on stage, and so seemingly ascend to a position of influence and control, is one that is of some importance. This claim illustrates not only a desire to react against the tradition of Aristotelian theatre, which he perceived as demanding submission to a

predetermined order (‘Short Organum’ 189), but also the fact that Brecht saw a need for a new way of ‘seeing’, for a revision of what it meant to be a spectator, as being fundamental to his avowedly non-tragic theatre of the scientific age.

It is in terms of sight and observation that Brecht draws the most explicit comparison, within his own writing, between theatre and the nature of physics and scientific knowledge. If Brecht was interested in the relation between auditorium and stage then, equally, some of the key problems that were occupying theoretical physicists centred on the relation between an observer and an observable or an unobservable entity (Reichenbach 1). Einstein’s epochal theory of General Relativity had not only displaced Newtonian mechanics, it had also raised questions about the nature of experience and ‘reality’. Moreover, attempts by physicists to describe fully the behaviour of subatomic particles had seemingly hit an impasse and so, in “referr[ing] to our incomplete knowledge of the world” (Heisenberg, *Physics and Philosophy* 21), challenged ideas about the capabilities of the scientific project. Due to the way in which nature behaves at the subatomic level, the scientific position that the universe existed as somehow separate from the conscious mind, and that it could be fully described, was no longer as tenable: Heisenberg’s Uncertainty Principle, for example, states that it is not possible to simultaneously know both the position and the velocity of a particle. Heisenberg shows that the act of measurement and observation impacts upon the particle in question in such a way that the energy transfer involved in ascertaining information as to one of the variables necessarily results in a change in the other (*Physics and Philosophy* 17). Brecht was well aware of the challenge that these developments posed to the notion of scientific observation and in *Messingkauf* the figure of the Philosopher raises the issue:

> The physicists tell us that in the course of their investigations into the very smallest particles of matter, they suddenly started to suspect that the process

> of investigation alters what is being investigated. The movements they observe under the microscope are supplemented by movements caused by the microscope. At the same time, the instruments are probably being altered too, by the objects they are focused on. If that's what happens when instruments do the observing, what happens when it's human beings doing it? (51)

The false assumption that the mechanical principles of the microcosmic are both directly and meaningfully applicable to the macrocosmic or to the social world, or that the interaction between an alpha particle and an electron can equate to that between two people, is a weakness of many studies seeking to explore the connections between science and literature. Brecht, to his credit, generally manages to avoid doing this and, instead, draws not on the actual details of scientific research but, rather, upon the avenues of thought opened up by the broader philosophical debate surrounding the interpretation of scientific findings. When Brecht has his Philosopher ask as to what might happen if humans are considered as observers rather than instruments he is not, therefore, seeking to suggest that the theatre is the same as the subatomic realm; instead, he is drawing upon the concept as an analogy so as to broach the idea of a new form of involved and critical ‘seeing’.

A desire on the part of Brecht to re-conceptualise theatricality, and the theatre, in a manner that incorporates the notion of a more complicated, and more explicitly important, traffic between stage and spectator can be found throughout his writing, both theoretical and for the stage. As such this chapter now moves to critically examine that idea in relation to two of the most important elements of performance in Epic theatre: gestus and the V-effect.

2.1 Gestus

Given its prominent position within Brecht’s thought on theatre, and the subsequent discussions on this, it is quite remarkable that gestus is a concept still

elusive of a clear definition or understanding, although this may be due in part to the fact that Brecht used the term with "annoying inconsistency" (Leach 127). "Epic theatre", Benjamin claims, "is gestural"[5] ('What is Epic Theatre? [1]' 3) and yet the actual ramifications of what this means in terms of embodied theatricality merit further analysis. The fact that Brecht "says very little about the body in his theoretical writing" has led, as Hector Maclean comments, to both an assumption that he pays little actual attention to it in practice and to only infrequent discussion as to "a link between body and gestus" (83). As such, the argument made by Pavis in one of the more rigorous existing considerations of the subject, is particularly useful. Pavis contends that, in Brecht's theatre, gestus

> represents one of the most subtle and productive concepts for the purpose of describing how the actor, the director and the spectator understand gestures in their common dimension […] it concerns the whole performance, it questions theatrical mimesis, it forces us to define the status of the body within the production and reception of the theatrical event. ('Brechtian Gestus' 177)

The inclusion, here, of the body within considerations of theatre and theatricality is important; so too is Pavis' suggestion that gestus is not simply an isolated or discrete practice performed by an actor on stage but that it is, instead, inherently implicated in the question of the performance as a whole.

At this point, however, so as not to defer too much to the chorus of secondary criticism, it is worth examining Brecht's own attempts to elucidate the concept, scarce though they are. One of his more detailed definitions is found in 'On Gestic Music', in which he sets out that:

> 'Gest' is not supposed to mean gesticulation: it is not a matter of explanatory or emphatic motions of the hands, but of overall attitudes. A language is gestic when it is grounded in a gest and conveys particular attitudes adopted by the speaker towards other men. The sentence 'pluck the eye that offend

[5] Bostock's translation is, here, read as being the adjectival form of 'gestus' and not the standard English understanding of that spelling. The question of translating 'gestus' into English caused a certain degree of difficulty due to the lack of a suitable equivalent word in current usage, as well as its similarity to 'gesture'. There is a degree of overlap in the denotations of these two terms; they are not, however, synonymous.

> thee out' is less effective from the gestic point of view than 'if thine eye offend thee, pluck it out'. The latter starts by presenting the eye, and the first clause has the definite gest of making an assumption; the main clause then comes as a surprise, a piece of advice, and a relief. (104)

In this instance, Brecht manages to both elucidate his understanding of gestus whilst simultaneously also failing to do so fully. The passage makes it clear as to what a gest/gestus is *not* but stops short of stating what it *is*, suggesting, instead, only that it is concerned with 'overall attitudes'. Considering the sentence that Brecht uses to illustrate his point here, which is taken from the New Testament (*King James Bible*, Mark 9.47) and also interestingly enough utilises the idea of the eye, it is worth analysing further the difference between the two variations. Whilst both act as imperatives, in the case of 'pluck the eye that offend thee out' it is the supposed solution, the instruction to pluck out, that is received first and the offending eye is positioned within that. With the second version, which Brecht claims to be more effective in a gestic sense, the problem and the solution are positioned more distinctly in terms of their relation: the imperative to pluck out your eye comes only as a result of that eye having first offended you. The greater value that Brecht finds in 'if thine eye offend thee, pluck it out' is therefore that it makes evident the process by which an action is effected.

Brecht's use of a sentence as a means to illustrate how a language might be gestic, however, has led to some analyses problematically privileging language and the written word within Brecht's theatre. Sean Carney, for example, despite usefully highlighting the general terms in which gestus might be understood, also argues that Brecht presents it as "drawing its inspiration from language" (29). Whilst linguistic expression plays an undeniable and important part within Epic theatre, with Brecht displaying "a rare preoccupation with *both* text and acting" (Badiou, *The Century* 41; italics added), the claim that gestus, as a particular aesthetic practice, is rooted in language is contentious. Indeed, considering the passage from 'On

Gestic Music' that was quoted above, Carney's argument extrapolates a false sequence: Brecht does indeed present an example of gestic language but it is to gestus that he attributes the primacy of form. Language is gestic, according to Brecht, only if 'it is grounded in a gest'; that is to say, it is a connection to a pre-existing 'gest' that determines the nature of a linguistic expression, and not *vice versa*. To suggest that Brecht's use of the 'pluck out thine eye' example indicates a linguistic origin for gestus is to read the theory backwards.

In this manner, the critical disagreement between Pavis, who contends that gestus complicates the role of the actor's body and risks repressing it ('Brechtian Gestus' 179), and Carney, who reacts against that which he perceives to be "uncritical valorizations of performance" (33) and proposes the act of 'reading' to be the primary trope (33), serves to highlight a tension between understandings of gestus. The body, it is now to be argued, lies at the heart of this conflict of ideas; more accurately, it is the bodies of both the actors and the spectators and the relations between these. Crucially, however, this is not to view the performing body as a form of panacea to complex theorising; instead, gestus demonstrates our embodied nature to feature within Brecht's thought as being something simultaneously both problematic and useful. The nature of gestus within Epic theatre rests upon an acknowledgement of the central importance of bodies within theatre but it also, pointedly, incorporates the uncertainties and limitations that a material existence presents to phenomenological experience. The gestus therefore embodies the notion of a "play of forces" that Badiou depicts in his description of Brecht's theatre, in which those involved in the theatrical event are "neither in the realm of psychology nor in that of the hermeneutics of meaning, neither amid language games nor within the Parousia of the body" (Badiou, *The Century* 42).

In so saying, Badiou indirectly draws the ideas of performativity and enactment into the debate. Arguing for a balance of forces within Epic theatre, between psychology, meaning, language, and the body, Badiou sets up the notion that for Brecht the language of the play is inseparable from the bodies of the play. Just as the actors maintain a physical presence within the theatre, so too is language present on the stage; language is enunciated by corporeal bodies but these same bodies also 'appear', to an extent, through language. The body, as we can comprehend it, is tied to language, and vice versa; it is in this manner that a constructive interplay of 'forces' can be understood, as neither of the constitutive elements of theatre can be taken to be passive. In terms of language within the performance and experience of gestus, Brecht's theory bears certain similarities to the basic principles of the 'speech act' as was introduced by John Austin and John Searle, and that was most notably later taken up by Judith Butler in her work on gender and performativity. The overarching contention of speech act theory is that there are forms of spoken utterance that do not simply convey meaning but also operate as a mode of action in their own right. An example of this that is commonly given is that of the utterance 'I do' in a wedding ceremony: the statement is a performative act that effects the marriage of the couple. Accordingly, for Austin, various elements of language such as promises, agreements, and the passing of judgement, are all instances of performative speech acts.

Performative speech acts were initially just positioned in contrast to 'constative' utterances before Austin introduced a different classification system with three parts. This new system introduced the terms 'locutionary', 'illocutionary', and 'perlocutionary' to refer to speech acts of differing natures. Locutionary denotes an utterance that has a "certain sense and reference . . . roughly equivalent to 'meaning' in the traditional sense", whilst illocutionary here describes one that, for

example, orders or informs and has a “certain (conventional) force” (Austin 110). It is, however, the perlocutionary speech act that is most interesting in regards to gestus and the Epic theatre, being defined as “what we bring about or achieve *by* saying something, such as convincing, persuading, deterring, and even, say, surprising or misleading” (110).

Considering, here, speech acts in relation to theatre, and in particular that of Brecht, the observation made by Austin that the majority of performative utterances involve an active first-person personal pronoun (60) is interesting. In everyday social interactions this may be straightforward enough but when thinking about the nature of bodies, language, and character in gestic Epic theatre the question becomes more complicated. Whilst Brecht does not have all those on stage speaking in an awkward and endlessly self-referential manner he does, however, instruct actors to show both themselves and the character they are presenting: “The actor”, Brecht informs us, “does not allow himself to become completely transformed on the stage into the character he is portraying. He is not Lear, Harpagon, Schweik; he shows them” (‘Short Description of a New Technique of Acting 137). Further to this, the fact that theatre is an aesthetic construct must also be taken into account. To take an example from *The Good Person of Szechwan*: “SHEN TEH: I will do it for you gladly” (78). Here, we would have an actor on stage speaking the given line but, because within gestic theatre they do not ‘become’ the character but rather present it, what the audience really receives is in fact ‘[I show that Shen Teh says:] I will do it for you gladly’. Indeed, this is to an extent reflected in three rehearsal aids that Brecht devised to help facilitate the style of acting that he demands for his Epic theatre, the first of which is for the actor to transpose their lines “into the third person” (‘Short Description’ 138). Accordingly, therefore, the situation is one in which the physical nature of gestic acting creates and highlights

a situation wherein a speech act that might otherwise be held as constative is simultaneously performative: the language spoken by the present actor is always actively giving appearance to a character on their body. The effect is, furthermore, intended by Brecht to be perlocutionary; that is, that it will cause something, such as change, to occur. As Austin made clear, the perlocutory effect occurs not in the speaker but in those that hear it; in this consideration, the theatre-goers in the auditorium.

Intrinsic, however, to this idea about language within gestus is also the fact that the device cannot, as was earlier intimated, be understood solely in terms of what is said; it relies as much on sight as it does on sound. What the consideration of speech act theory serves to show is, though, that these two factors are not simply co-present but are strongly interconnected. As Nägele contends, in his Benjaminian study *Theater, Theory, Speculation*, language "intersects with the body and cuts through it; language constitutes it as a speaking body, while the speaking body in turn marks language" (36). To a certain extent, this would also be an issue within non-Epic theatre; however, Brecht engages much more pointedly with this element and it is in terms of a play's spectators, and the role that they have, that this aspect can best be examined.

This theatrical suspension within a network of 'forces', between various 'realms' that have no individual dominance, between bodies and language, is supported by the way in which Brecht re-conceptualised the nature of the spectator, advancing the idea of "*eine neue Zuschaukunst*", as the critic Hans Mayer described it in a 1989 television interview: "a new art of being a spectator" (qtd in *Brecht on Stage*). Brecht did not want a passive audience for his theatre and was interested instead, as the earlier passage from *Messingkauf* indicates, in a spectatorship actively implicated in that which they were seeing; the focus in Brecht's theatre always

being, as Barnett states, on the spectator (68). The development of a gestic theatre was significant in helping to enable this, with the gestus operating as a powerful tool for the decentralisation and the relocation of importance into the relational space between not only the actors and objects on stage but between the stage and the auditorium as well. The ‘overall attitude’ with which gestus is concerned, according to Brecht, is therefore more inclusive than an initial reading of ‘On Gestic Music’ might suggest.

This notion of “overall attitude” also does much to counteract a traditional understanding of character within theatre. The figure on stage, enacting a gestus, is not performing the role of a psychologically-grounded character navigating a certain situation; instead, the character, whether it be Galileo or Mother Courage, is presented to exist as but one part of an overall attitude or set of relations. To take as an example the oft-noted ‘silent scream’ of Mother Courage, as played by Helene Weigel: the grief displayed is not so much that of an individual but of a more general situation. The reaction to the realisation of Swiss Cheese’s death is not rooted in any certain psychology ascribed to the character of Mother Courage; it is the product of a situation set out on stage. As such, Brecht demands that it is not Mother Courage as an isolated individual that the audience observes but, rather, Mother Courage-in-relation-to-everything-else as part of an overall attitude. The scream was incorporated into the production by Weigel, approved by Brecht, and is generally understood to have been inspired by a photograph taken of a woman next to her dead child during the bombing of Singapore (Brecht, ‘Courage Model’ 213). The silence of the scream, a “remarkable moment in Brechtian theatre” (Revermann 220), is thus both a direct recreation of the original two-dimensional visual image and the rendering of a particular emotional attitude into something that is profoundly theatrical.

That which makes the scream so exceptional for Revermann, and indeed he holds this to be the case not just within the context of Brecht's theatre but within that of the twentieth century as a whole (220), is that it represents a

> theatrical situation . . . where words have reached their limit as a means of expression, where an event and its surrounding circumstances are of such horror and intractability that only the performer's body is able to give it theatrical shape and expression. The transition from voice to body, speech to action, sound to gesture – so crucial for the performance arts since the 1960s and the concomitant rise of post-dramatic theatre forms – is prefigured in this very moment. (220)

Revermann's point in this regard is astute; the physical expression of the scream is able to immediately convey a certain impression that an utterance would be unable to so easily achieve. In arguing, however, primarily that this gestic action is the necessary one to make in order to give 'theatrical shape and expression' to a horrific situation in which words fail, Revermann problematically limits the scope of a consciously embodied, gestic, form of acting. Certainly, gestus is a powerful tool in the expression of the unutterable; it is, though, also particularly effective as a more general means for moving beyond the potential limits of language in theatre, and not just in shaping traumatic scenes. To extend this line of thinking slightly further, it must also be noted that, in addition to pushing beyond some of the boundaries of linguistic expression and giving theatrical representation to the moment captured in the war photograph, the gestus of the silent scream is also distinctly reproducible. For all that it appears to present, on one level, a unique and abysmal moment, the gestus exists and operates in a manner that simultaneously gives it a certain quotable nature. Accordingly, an analysis of Benjamin's writings on Brecht and theatre suggests itself, here.

2.1.1 The quotability of gestus

The concept of the quotable potential of Epic theatre is one that occupies a key position within the Benjaminian understanding of Brecht's aesthetic. In 'What is Epic Theatre?', which exists in two slightly different versions, Benjamin holds that one of the "essential achievements" of this form of theatre is that it made gestus quotable and states that "[t]hat its texts are quotable would be nothing very special. But the gestures used in the process of acting are another matter" ('What is Epic Theatre [Version 2], 19). For Benjamin, this constitutes "an artistic method of the subtlest kind" (19). Unsurprisingly, perhaps, Benjamin underpins his argument as to the peculiar nature of gestus within Epic theatre with an important consideration of the notion of quotation that is not lacking in subtleties of its own; one that is centred on the idea of interruption.

The act of quotation, as Benjamin conceives of it, is one that is closely linked in nature to that of interruption; in fact, he sees interruption as being "the origin of quotation" ('What is Epic Theatre? [2]' 19). Moreover, it is also proposed that, beyond this, interruption is to be understood as being "one of the fundamental methods of all form-giving" and also something that extends "far beyond the domain of art" (19). Whilst domains beyond that of art do not receive much critical attention from Benjamin within 'What is Epic Theatre?' he does, however, work to set out that which he believes to be the importance of interruption within the Brechtian theatrical aesthetic. In order to do so, Benjamin returns to the oppositional distinction that is drawn between Epic theatre, on the one hand, and Aristotelian dramatic theatre, on the other. As Brecht himself emphasises in his own theoretical writings, so too does Benjamin work to clearly establish that one of the key differences between the two forms of theatre is the relation that they seek to establish with the audience. "To put it as a formula", writes Benjamin of the

experience of a performance of Epic theatre, “instead of identifying itself with the hero, the audience is called upon to learn to be astonished at the circumstances within which he has his being” (18). The observation that Brecht’s theatre intended to disallow both emotional catharsis and empathetic identification with characters is, obviously, not one that can be termed as an original insight in and of itself; that which makes Benjamin’s examination of particular interest, however, is his suggestion as to the way in which this is achieved. It is in this respect that the idea of interruption assumes its position of importance within Benjamin’s thinking on Epic theatre.

Having succinctly highlighted that basic difference between dramatic and Epic theatre, Benjamin then goes on to expound upon that which he holds Brecht to understand as being the function of his theatre, in terms of what it seeks to achieve on stage. At the conclusion of a short but significant passage concerning this issue, and one that is worth citing here in full, Benjamin introduces the concept of interruption as part of an aesthetic explicitly for the first time. To this effect he writes that

> [t]he task of epic theatre, Brecht believes, is not so much to develop actions as to represent conditions. But ‘represent’ does not here signify ‘reproduce’ in the sense used by the theoreticians of Naturalism. Rather, the first point at issue is to *uncover* those conditions. (One could just as well say: to *make them strange*.) This uncovering (making strange, or alienating) of conditions is brought about by processes being interrupted. (‘What is Epic Theatre? [2]’ 18)

The first thing to note is the similarity between Benjamin’s usage of the terms “conditions” and “processes” and Brecht’s description of gestus from ‘On Gestic Music’. Positioning conditions, here, as being generally covered or subsumed within processes Benjamin reiterates the difference between the two versions of the verse from the Gospel of St Mark: an eye causing offence is a condition; plucking out eyes that cause offence is a process. Whilst all processes are dependent upon the existence of conditions they also come to assimilate them, and

what Brecht's theatre seeks to do is to show conditions to be the starting point for process. The idea of the interruption of processes that Benjamin introduces in connection here is, then, something that he understands as underpinning much of Epic theatre; interruption, or "discontinuity" is also, interestingly, viewed by Benjamin as being significant to scientific method (*The Origin of German Tragic Drama* 33), as will be considered further later. In the sense that the term is used in this instance, however, the final sentence of the passage represents less a paraphrasing of any aspect of Brecht's own thought than it does an interpretation by Benjamin of his friend's theory. Whilst Brecht does consider interruption insofar as it corresponds to the episodic structuring of Epic theatre, he does not explicitly examine the notion in connection to devices such as gestus or the V-effect. The importance of Benjamin's contention in this regard, then, is that it shifts the critical focus away from the overarching structure of the play and on to, instead, a more general relationship between stage and auditorium. Whereas the disjunctions in the narrative time of the play constitute one form of interruption, one between sections being performed, the kind of interruption that Benjamin sets out is concerned, rather, with one aspect of the audience's perceptual experience of the play. It is, however, a subtle distinction. In stating, in the passage above, that the "uncovering", or the V-effect, is the result of acts of interruption, Benjamin is referring not to a break in anything occurring on the stage but, rather, to the process by which the spectator understands the play.

The "crudest example" that Benjamin provides in order to illustrate his idea of interruption within Epic theatre is that of a witness to a family argument ('What is Epic Theatre? [2]' 18). We are asked to imagine how a stranger might perceive the scene if they suddenly appeared at the open door mid-dispute:

> 'Tableau', as they used to say around 1900. That is to say, the stranger is confronted with a certain set of conditions: troubled faces, open window, a

> devastated interior. There exists another point of view from which the more usual scenes of bourgeois life do not look so very different from this. (19)

The acknowledged crudity of the example aside, it is the notion of tableau that is particularly problematic within the analogy as it implies a cessation of activity that does not occur within Brecht's theatre. Indeed, neither does the practice of calling "tableau" actually seem to fit with the argument that Benjamin is otherwise trying to make about interruption: a scene would not be made to appear strange to a spectator solely through its being frozen in one instant; it is the fact that, within the example, the observer is positioned as an involved *stranger* that causes a critical interruption in the process of familiarised understanding. That Benjamin elects to invoke the idea of the tableau vivant is, though, possibly more of a rhetorically informed decision: it provides a useful foundation for his subsequent discussion of 'the quotable gestus'; it also establishes a connection to the broader ideas of reproducibility that Benjamin was concerned with, in that the form was often a means of reproducing, in 'real life', famous works of art.

Returning to the question as to what it is that is to be understood by the claim that Brechtian gestus is quotable, Benjamin's analysis of Brecht's theatrical device states early on that "quoting a text implies interrupting its context" ('What is Epic Theatre? [2]' 19). From the idea of textual quotation, Benjamin moves on to make a comparison between gestic acting and print production, "[t]he actor must be able to space his gestures as the compositor produces spaced type" (19), before more clearly introducing the concept of repetition. Taking an example from *The Measures Taken* in which a group of people have to present to a tribunal an account of the actions they took against another person, Benjamin emphasises that in so doing "they not only repeat the event but also reproduce the gestures made by the other comrade" (19). Here, again, however, the argument that is set out provides some confusion: quotation of text is quite different in principle to the

presentation of printed font; the concept of that which could be termed a quote-interruption is not entirely congruous with the form of interruption examined earlier as being that which is central to Epic theatre. In the latter instance, interruption is related to the action taking place on the stage insofar as Brecht aims for his theatre to force that the spectator sees the relations within the situation and form a judgement. The interruption in that case, then, as has been argued, is to the familiarised perception of actions, and it is intended to reveal a particular condition within its context. Quote-interruption, by contrast, implies not so much a 'pause', as Benjamin would have it, in the process of uncritical observation but rather a removal, or even relocation, of something from an initial context. There is, therefore, a difference in terms of the focus of Benjamin's two analogies: one draws upon issues of temporality; the other is concerned with location, setting, or, to possibly over-simplify, space.

This otherwise almost contradictory fusion of interruptions of both time and location within Benjamin's argumentation is, though, actually rather apt given that he is attempting to provide an elucidation of the form of theatricality that Brecht developed. Theatre being, as DeKoven was shown in the previous chapter to have neatly posited in relation to Stein's landscape plays, the aesthetic medium in which "space-time is tangibly manifest" to the greatest degree" (87). Accordingly, the emphasis that is ultimately placed by Benjamin upon repetition and reproduction is shown to stand upon this, as those two practices both involve significant engagement with the dimensions in question. The strength of Benjamin's reading of Brecht lies, therefore, in the fact that rather than stating solely that a quotable gestus is one that can be repeated, as is indeed the case, he augments this theory by also highlighting the more complex dialectical relationship between the acts of interruption and repetition that underpin this aspect of gestus. An understanding of

this kind is, furthermore, very much in keeping with the contention that Benjamin makes in another essay collected in *Understanding Brecht*, in which he suggests that in addressing the problem of the "methods used in processing gestures [sic]" the "true dialectic" of Epic theatre is revealed ('Studies for a Theory of Epic Theatre' 24-25). On this point, he elaborates by claiming:

> For a start, the following relationships are dialectical: that of the gesture to the situation, and *vice versa*; that of the actor to the character represented, and *vice versa*; that of the attitude of the actor, as determined by the authority of the text, to the critical attitude of the audience, and *vice versa*; that of the specific action represented to the action implied in any theatrical representation. (25)

In many ways, this is a rather illuminating passage when viewed in conjunction with a close-reading of Benjamin's thoughts on gestus. Positing the relationship between a gestus and a situation as being dialectical in nature, with each therefore informing and constituting the other, Benjamin's claim here gives the notion of quotation that he earlier sets out a greater coherence. Despite this, though, it could still be asked as to why it is, exactly, that Benjamin sees making gestus quotable as being such a new an important achievement.

Indeed, it is prescient at this point to consider what obstacles, if any, could have been seen to prevent a gestus from being quoted, from being repeated, other than possibly the implausibility of there being another situation that would demand it. In the example Benjamin uses from *The Measures Taken* an event is repeated before a tribunal; equally, returning to *Mother Courage*, had there been a situation that prompted it, the gestus of the 'silent scream' could also have been quoted. In both instances, the importance lies in the fact that actions within a context can be shown and reproduced. Building upon this, then, it can now be argued that implicit within Benjamin's argument for the quotable nature of gestus is an interest in the production and function of Epic theatre more generally, and one that is in line with his thoughts regarding the reproducibility of art. The implication that can be drawn

from this is that the issue here is not just that Epic theatre has made gestus quotable within the play, but also that the importance of this as a theatrical practice carries beyond the performance of a single work for the stage. For indeed, if a gestus can be quoted, or repeated, with, as is nicely illustrated within the example taken from *The Measures Taken*, an amended cast of participants because that which is being reproduced and shown is an overall attitude, a set of behaviours, then the theatricality of Epic theatre is seemingly devised with the idea of reproducibility in mind. The existence of Brecht's own *Modelbuchen*, or 'model books', (such as *Courage Model 1949*) certain help to support this idea on a slightly different level. These model books were produced, using photographs taken from performances by the Berliner Ensemble, as a means to provide what would be, if not a strict blueprint for any future staging of the play, at least a thorough guide as to the method of its performance.

The idea of method, here, also provides a segue into another understanding of the function of quotation within Epic theatre that can be considered; one that the contemporary Marxist critic Frederic Jameson introduces in his relatively recent study *Brecht and Method*. Whereas Benjamin examined the quotable nature of gestus primarily in terms of the distinct possibility that it provided for repetition and reproduction, for Jameson the idea of quotation as a theatrical practice also represents a certain engagement with notions of self. Quotation, in Jameson's argument, is presented as almost synonymous with the "third-person acting" of gestus in that in order for an actor to present the actions of a character "something must be quoted, some 'already existing' and recognizable (or at least nameable) gesture must make up the substance of the quote" (69). This concept of referentially-constituted character is rooted, Jameson suggests, in issues of

identification and intersubjective notions of the self; to this end, he makes the case that

> Brecht's positions are better read not as a refusal of identification but, rather, as the consequences to be drawn from the fact that such a thing never existed in the first place. In that case, 'third-person acting', the quoting of a character's expressions of feeling and emotion, is the result of a radical absence of self, or at least the coming to terms with a realization that what we call our 'self' is itself an object for consciousness, not our consciousness itself: it is a foreign body within an impersonal consciousness, which we try to manipulate in such a way as to lend some warmth and personalization to the matter (68)

Jameson's argument here is nuanced in its insight. In presenting the idea that Brecht's conceptualisation of theatricality reflects a conception of a sense of self as being object and not just subject, Jameson implicitly involves the question as to how we can understand ourselves within the very context of our striving for knowledge and understanding. In *Brecht and Method* this is connected to a brief invocation of the mirror-stage of ego development theorised by Lacanian psychoanalysis: a stage in which, Lacan argues, an infant begins to gain subjective awareness through the apperception of themselves as an object, identifying with this "specular image" (75-76). Furthermore, though, Jameson's contention also raises the question as to how Brecht theorised characters within Epic theatre in terms of gestus and of their perception by spectators; particularly the manner in which the observing consciousness of such a spectator exists and operates within the theatre.

2.1.2 Complicating a character

Character is a key, if often contested, element of theatre and, in terms of Epic theatre in particular, it is strongly connected to the societal aspect of gestus, that is, its function as a form of social commentary or critique. Performance of a gestus, as has been repeatedly established by both Brecht and those that study him, presents

to the audience an action within a specific context (Barnett 97). A character's actions, or reactions, are not understood in isolation but, instead, must be viewed holistically in connection to everything else. In order to achieve this in the theatre, Brecht recognised the importance of critically engaging with the embodied aspect of the medium as well as with the verbal one. As with Stein's formulation of the play as a landscape, in which everything exists in necessary relation, Brecht's gestus ties language to a physical stage in which the concept of a truly individuated subject is subverted.

This gestically-defined character in Brecht's theatre marks a subsuming of the notion of an 'I' into that of a more collective 'we'. Such an idea has been proposed and elaborated on in a number of different ways, although only two shall be considered here. Both of these engagements share the same underlying postulation that an individual and discrete self does not truly exist within Epic theatre, but then direct their arguments in slightly different directions, albeit not necessarily contradictory ones. In the first instance, remaining a while longer with *Brecht and Method*, Jameson contends that the 'self' or the 'I' of the character is sublimated into a more general idea of socio-historical processes and systems; the gestus performed by actors constituting a tiered act of abstraction whereby the concept of an individual figure becomes secondary. Gestus, as Jameson understands it in this regard, is a means by which

> a specific act – indeed, a particular event, situated in time and space, and affiliated with specific concrete individuals – is then somehow identified and renamed, associated with a larger and more abstract *type* of action in general, and transformed into something *exemplary* (even if archetypal is no longer the word we want to use about it). (129)

Interpreting Epic theatre in this manner provides an interesting positioning of the concept of character, insofar as it maintains a presence on the stage, as being primarily a referentially illustrative device within an exemplar. Brecht's formulation of theatricality has no place for characters in a more traditional sense because, by

this reading, his aim is not to present people and figures *per se* but rather processes following from conditions, and "types". As a critical engagement with the issue, Jameson's is useful and well-grounded; it does not, however, take the actual live theatrical experience into account to any great extent. It is in this regard that the second approach to the question of character within Epic theatre to be considered here, that made by Walter Sokel, is important.

In an old but important reading of character within Brecht's aesthetic, Sokel makes the claim that for Brecht "character is not a unity but an ensemble" (177). Whilst appearing as a comparatively simple statement, the contrast drawn between "unity" and "ensemble" is in fact both significant and deceptively complex. It is as part of his desire to react against the "absolute, and fate-determining quality" of character in traditional European theatre that Brecht, Sokel argues, develops his own understanding of theatrical character (177). Even relatively early on his career, at least by *Man is Man*, Brecht is seen by Sokel to have adopted the ideological position that a person "does not exist as an individual, i.e. as […] indivisible and essentially unchangeable" (177). In *Man is Man* this idea exists as both theme and theatrical praxis, with the play foregrounding the change in Galy Gay's character/identity as a result of the influence of the soldiers and the situation in which they find themselves positioned. Over the course of the play it is made clear that character is not a 'unity' insofar as that term denotes a single, concrete, individual, but is an ensemble in the sense that the character of Galy Gay as it is ultimately understood is shown to be a composition of various forces and effects acting upon the body on stage. The achievement of this, in theatrical terms, is, crucially, dependent in large part upon an engaged form of observation; Sokel also highlights the significance of the visual, phenomenological dimension of theatre, noting that characterisation in Epic theatre does not possess the element of

psychological motivation “from which classical and even naturalistic dramaturgy proceeds” (177). That form of motivation as concept within theatricality is problematic for Brecht due to it not being physically perceivable, Sokel suggests, with Brecht preferring to work with “the visible, the viewable gesture, the observable act of the figure” whilst also acknowledging that gestus is “ambiguous” and observable only through its effects and not by its causes (177). This ambiguity, it is now to be argued, is indeed closely connected to issues of observation; more specifically, though, to expand upon Sokel’s reading, this quality reflects the particular role that Brecht gives to the spectator within Epic theatre.

To expand upon this: in presenting a part within a play, an actor is required to distance themselves from the character and to consider how they are to be seen (‘Short Organum’ 194-5); more importantly, though, the spectating audience perform an essentially constitutional role within the theatrical event. If a gestus, and gestic character, is the overall attitude of various people and objects in relation then, it is to be asked, is it therefore formed in the ultimate moment by the perception of the observing audience of all that is on stage? If character, as it is in other forms of theatre, is treated as concrete and inherent within an individual figure then an audience can watch as he or she navigates scenes on stage that are equally determined and distinct from them; in this manner they are passive in their observation, empathising but situated within a position of immutability. Indeed, as Herbert Blau has suggested, Brecht’s theories of theatricality in this respect served to remind us that “character, as we see it in the classics, is a victimizing mechanism, serving the gods, the plot, the author, and therefore inhibiting to an alteration of reality” (*To All Appearances* 165). In Brecht’s theatre, however, any understanding of character depends solely upon the ways in which they behave in relation to others and so this necessarily is constructed by the audience itself

through the act of spectating that synthesises the tensions on stage into a form of meaning.

In many ways, this notion of dialectical synthesis between the stage and the auditorium is a good illustration of Jacques Ranciére's notion of the emancipated spectator (with emancipated being, in this context, broadly equivalent to 'engaged'). For Ranciére, the key to emancipating the spectator in theatre is to create "a theatre without spectators, where those in attendance learn from as opposed to being seduced by images; where they become active participants as opposed to passive voyeurs" (4). Ranciére uses, here, the phrase "theatre without spectators" because he is understanding 'spectator' in the fixed, and particular, sense of an essentially detached onlooker "separated from both the capacity to know and the power to act" (2). Brecht's theatre is not without spectators; it is, though, one with spectators whose nature and role has been redefined, as has the broader understanding of the concept of observation within both Brecht's mind and the scientific community.

A further means by which this relationship between observation, gestus, character, and science, can be analysed is provided, once again, by Benjamin in his notoriously dense *The Origin of German Tragic Drama*. Whilst the focus of that study is obviously not Brecht's theatre, the 'Epistemo-Critical Prologue' in particular does, nevertheless, establish a number of arguments that are useful for thinking through the issues at hand here; especially Benjamin's critical notion of the constellation. Lengthy, "immensely difficult" (Nägele 1), and ambitious in its scope, the prologue to Benjamin's study exists not so much as an introduction to the thesis but rather (as its title does, admittedly, suggest) as a rigorous discussion of the nature of philosophy, knowledge and of ideas. The section that is of interest in this instance occupies a few pages close to the start of the prologue, and it concerns

the relation between methodology and representation as a means of approaching the world and 'truth', and in doing so also establishes parallels with the critique of the 'ancient quarrel' made in Chapter One. Considering various approaches to a world of ideas that is essentially Platonic in nature, Benjamin draws some comparisons between artists, philosophers, and scientists:

> The [artist] sketches a restricted image of the world of ideas, which, because it is conceived as a metaphor, is at all times definitive. The scientist arranges the world with a view to its dispersal in the realm of ideas, by dividing it from within into concepts. He shares the philosopher's interest in the elimination of the merely empirical; while the artist shares with the philosopher the task of representation (32)

The distinction that is made between the metaphorical images of the artist and the conceptual divisions of the scientists is interesting in its implications. That a work of art is described, here, by Benjamin as being that which is "at all times definitive" does not, perhaps, entirely fit with a general received opinion of it being the sciences that strive towards and claim the authority of definition. Similarly, given the common association of science to empiricism, particularly post-Enlightenment, Benjamin's contention that the scientist be seen as sharing a philosophical interest getting rid of the "merely empirical" is striking. The crux of the matter for Benjamin can be seen to be the difference between the concepts of representation and analysis, in terms of how they relate to human understanding. In this manner, Benjamin positions the artist as being distinct from the scientist but as connected to the philosopher through a shared concern with representation; the scientist is held as being distinct from the artist but similar to the philosopher because an interest in analysis is common to the latter but not the former. Philosophy, therefore, exists, it would seem, as being a seemingly more complete discipline.

If there is one main weakness to Benjamin's argument in this regard it is that his distinctions can be seen as being possibly too sharply defined and too binary. Whilst philosophy is presented as possessing a positive combination of interests

and methods, Benjamin does also work to enforce a sense of critical distance between art, science, and philosophy in terms of their ultimate aims and foundations that is slightly problematic. Certainly, the suggestion that there "has been a tendency to place the philosopher too close to the scientist, and frequently as the lesser kind of scientist" (32) is interesting in light of the fact that the quantum revolution saw a reversal of this comparison: the physicists at the forefront of the field being held up as being essentially philosophers operating under the guise of theoretical physicists (Peter Gibbins 49). The reason for Benjamin's adoption of this position might, however, be better understood as being reflective of the historical focus and scope of *The Origin of German Tragic Drama*; rather than being a pointed analysis of the situation in the first decades of the twentieth century, prologue acts as examination of the long dureé of Enlightenment thought. Indeed, continuing to move to return to the notion of the constellation as Benjamin theorises it, there are several instances in the first section of the prologue in which arguments that are presented assume quite a different significance when considered in more direct conjunction with Brechtian theatrical theory.

To take one such passage, Benjamin's exposition of the foundational principles of philosophical reasoning provides a number of interesting, if at times contentious, ideas. "The concept of philosophical style", it is claimed, "is free of paradox" and possesses certain postulates (32); these postulates are, Benjamin continues:

> the art of interruption in contrast to the chain of deduction; the tenacity of the essay in contrast to the single gesture of the fragment; the repetition of themes in contrast to shallow universalism; the fullness of concentrated positivity in contrast to the negation of polemic. (32)

It is hard to see how it is, exactly, that a style that preferences interruption over continuity whilst simultaneously lauding the tenacity of the essay form against the 'gesture of the fragment' can be described as being one without paradox. Easier to see, however, is the congruence between the language that Benjamin uses here

and that which he later calls upon when discussing Epic theatre: ‘interruption’, ‘gesture’, ‘fragment’, ‘repetition’. Whilst Benjamin often refers to Epic theatre as being political, he never explicitly suggests that it might also be philosophical; Brecht himself, however, does make this claim, writing in the ‘Katzgraben Notes’: “My theatre - and this can hardly be held against me, in and of itself - is a philosophical one, if the term is understood in a naive sense” (251). In this manner, the theatricality of the Brechtian aesthetic can be seen on one level to be ‘philosophical’ in the sense that Benjamin understands philosophy in terms of its postulates; further to this, though, aspects of Epic theatre also bear a certain similarity to some of the issues argued, within the ‘Epistemo-Critical Prologue’, to be surrounding the scientific method.

The nature of, and the relations between, Objects, Phenomena, Concepts, and Ideas[6], constitutes a large part of Benjamin’s critique of scientific methodology and epistemology. It is argued that science delimits its own ability to facilitate the advancement of knowledge through its supposed ambitious insistence on trying to “grasp the truth . . . in an encyclopaedic accumulation of items of knowledge” (33). Reminiscent not only of the second statement of Ludwig Wittgenstein’s *Tractatus Logico-Philosophicus*, “The world is a totality of facts, not of things” (5), but crucially also of Heidegger’s interpretation of the scientific world picture, this position proves problematic for Benjamin, however, in that he takes truth to be something that “remains an indivisible unity” (33). Truth, in Benjamin’s mind, can only be experienced in the world of Ideas; therefore the failing of the form of science that he criticises is that it holds, instead, that truth can be attained by comprehensively compiling Phenomena.

[6] For the sake of clarity, in this section of the discussion, these terms when being used outside of quotation and in the Benjaminian manner will be capitalised to distinguish them from standard usage.

Objects and Phenomena are crucially different in quality from Ideas according to Benjamin, and this contention forms an important part of his more general thesis on representation and analysis. One of the primary issues examined is the way in which the relation between an Object or a Phenomenon and an Idea might be understood; here, the question of 'unity' once again arises and starts to steer us back toward Sokel's notion of the ensemble nature of Brecht's characters. Benjamin is quite clear on the fact that he believes that Phenomena do have a connection to Ideas, but, equally, he argues that "Phenomena do not enter into the realm of ideas whole, in their crude empirical state, adulterated by appearances, but only in their basic elements, redeemed" (33). The 'redemption' of Phenomena consists of their being "divested of their false unity so that, thus divided, they might partake of the genuine unity of truth" (33). The Concept is then introduced by Benjamin as being essentially an intermediary form that exists and operates between the realms of Phenomena and of Ideas, the former being positioned as "subordinate" (33). More specifically, Concepts are assigned a functional role that is closely implicated with issues of representation. Concepts effect the resolution of Phenomena into their 'basic elements'; furthermore, Benjamin expands upon this to posit that:

> Through their mediating role concepts enable phenomena to participate in the existence of ideas. It is this same mediating role which fits them for the other equally basic task of philosophy, the representation of ideas. As the salvation of phenomena by means of ideas takes place, so too does the representation of ideas through the medium of empirical reality. For ideas are not represented in themselves, but solely and exclusively in an arrangement of concrete elements in the concept: as the configuration of these elements. (34)

The argument here is relatively abstruse and demands a certain degree of unravelling. The general thrust of Benjamin's contention at this point, though, is that empirical reality can only attain a presence within human understanding through involvement in the realm of Ideas. Such involvement is facilitated by a Concept that

subdivides the perceived, but false, unity of a Phenomenon into its component elements; equally, Ideas themselves depend upon Concepts for their representation. There is some difficulty attached to the task of ascertaining precisely what Benjamin means by Concept, however, for whilst he attributes to it an important epistemological function he does not devote much time to its definition. Referring back to his earlier statement regarding the scientific approach to the world, as opposed to that of art or philosophy (32), it is evident that a Concept is a form of division that results from an analytic rather than representational methods. The Concept is, then, it seemingly follows, an understanding of Phenomena or Objects that uncovers and recognises their constituent elements. Connecting the Concept and the Idea, Benjamin argues, is the fact that the latter cannot be represented in and of themselves but, instead, must do so via 'empirical reality': Concepts enable this representation as they have divided the 'unity' of the empirical realm into elements that an Idea can then rearrange. Having previously refrained from having clearly set out his understanding as to what an Idea is, Benjamin is lead shortly following this passage to propose the definition to be that an Idea is "the representation of phenomena" (34).

The question that might be asked as to whether or not an Idea "comprehends that from which it apprehends", in the same manner as genus does species, is not one that Benjamin views as being meaningfully applicable (34). For him, Ideas simply do not exist on the same plane of existence as Phenomena. Fittingly, given the pseudo-religious undertones noted in earlier sections of his writing, Benjamin uses a celestial analogy to further illustrate the function and ontological nature of Ideas: "Ideas are to objects as constellations are to stars", he writes, seeing the implication of this as being that they are "neither their concepts nor their laws. They

do not contribute to the knowledge of phenomena, and in no way can the latter be criteria with which to judge the existence of ideas" (34). A constellation provides no insight into its component stars themselves, just as those astronomical bodies have no connection to the constellation other than that of their position within it. A constellation is representational arrangement of stars just as an Idea is a representational arrangement of Objects or Phenomena. Important to the argument and yet never explicitly highlighted by Benjamin is the role of the human observer; it is here that an integration with Epic theatre suggests itself.

Continuing with the celestial analogy in this regard, it is the case that the arrangement of a constellation necessitates the presence of an engaged, non-passive observer of the night sky. If, however, the heavens in this illustration were exchanged for a scene from the Epic theatre instead, Benjamin's thesis can still be seen to fit and provide insight into the mechanics of Brecht's theatricality. Brecht, it will now be argued, combined scientific and philosophic methods in order to work across and to represent the same set of realms as Benjamin delineated; with the particular, embodied, nature of the theatrical experience proving central to his doing so. To work backwards, or down the hierarchy, a certain equivalence can be drawn between a gestus and an Idea. Just as Benjamin describes Ideas as being "the general" (35) so too is the gestus of Epic theatre described by both Brecht and other as being an 'overall attitude': gestus, as has been shown, is experienced as the perception of the relations between multiple elements and their organisation. Equally, as with the Benjaminian Idea, a gestus cannot be represented in itself but is instead perceived only through objects existent within the empirical reality of the senses. In this manner, considering the relation between the notion of character as Brecht theorised it and the phenomenal elements of theatre, there is a case to be made for understanding character as operating as a form of mediating Concept.

Character seen as a non-concrete unity becomes, in this manner, a significant and functional facet of Epic theatre in terms of Brecht's intentions. On the epic stage, character exists in one sense as the conceptual, and perceptual, distinction between the actor's own body and their performative body; that is, between the simultaneously present and displayed body of the actor as the actor and the body of the actor as their dramatic part, effected by the theatricality of the play. On another level, character, here, is also the dissolution of the notion of an autonomous, psychologically autochthonic, identity into distinct behaviours in response to other objects and forces. It is for this reason, also, that so many earlier studies of Brecht were coloured by references to his interest in Behaviourism during the 1930s (Douglas Robinson 236). Regardless of those readings, though, the fact of primary importance here is that Brechtian character is constituted of an ensemble, to borrow Sokel's term once more, of Conceptual distinctions rooted in the empirical and phenomenological realm. Whilst there might be seen to be a degree of similarity between character and gestus in this sense the crucial difference, albeit perhaps a subtle one, lies in the fact that, whereas the theatrical aim of gestus is unity grounded in representation, character is used by Brecht to instead uncover the parts within a false unity.

The understanding of the experience of Epic theatre that emerges from this particular analysis becomes, therefore, rather intriguing. If Benjamin claimed that within the philosophy of art that *Trauerspiel* is an Idea (38) then how might Epic theatre in turn be comprehended in these terms, being formed of multiple gestic Ideas? To provide an answer to this, it can again be noted that for Brecht the spectator played a more important and involved role than the relative paucity of critical attention would suggest. Indeed, the audience member might be considered equally as a part within the play. Brecht also, as this chapter argues and bears

repeating here, engaged much more pointedly with philosophy-infused and non-positivistic science of quantum theory than did Benjamin, whose preoccupation within the 'Epistemo-Critical Prologue' was instead with science of the previous paradigm. Taking this into account, a comparison of Epic theatricality to Benjamin's conception of truth suggests itself.

Truth, for Benjamin, is something that features as one of the more abstract postulations within the prologue; indeed, the language in which he describes it once again possesses resonances of the mystic aspect of his thought, developed through his correspondence and friendship with the kabbalist Gershom Scholem. As a result, it must be acknowledged that the comparison of this notion to Brecht's decidedly non-mystic aesthetic is not performed without an awareness that a certain degree of 'crude' or analogic thinking is involved; still, despite the differences in tenor, there are important basic similarities. Truth, Benjamin is clear in emphasising, is not the "object of knowledge" (*The Origin of German Tragic Drama* 36) because knowledge for him in this instance is understood as finding itself concerned only with Concepts. Instead, that which Benjamin establishes truth to be is much less self-evident, with him positing that:

> Truth is an intentionless state of being, made up of ideas. The proper approach to it is not therefore one of intention and knowledge, but rather a total immersion and absorption in it. Truth is the death of intention. […] The mode of being in the world of appearances is quite different from the being of truth, which is something ideal. The structure of truth, then, demands a mode of being which in its lack of intentionality resembles the simple existence of things, but which is superior in its permanence. Truth is not an intent which realizes itself in empirical reality; it is the power that determines the essence of this empirical reality. (36)

The notion of truth set out by Benjamin here, then, appears to be one that can best be understood as existing fundamentally as a form of experience. More specifically, the experience described is one of an 'immersion' in Ideas and the relations between them. In these terms, Epic theatre, too, functions as an immersion into a theatricalism made up of gestus. This immersion is not one of empathetic

identification, which as Brecht argued is shallow at best, but is instead the emancipated and critically-involved spectator whose act of observation entangles them inextricably with the observed. Similarly, the immersion into 'the death of intention' is not read to imply a stupefaction of the audience; rather the emancipation of itself from familiarity, ideology, and so forth. It is at this point, however, that a possible divergence of sorts appears between Benjamin and Brecht for, whilst Benjamin ascribes a certain fixity and 'permanence' to the structure of truth, just as he labels ideas as "timeless" (34), Brecht's thought and theatre hinges upon the notion of change.

Accordingly, a truth that is qualified by the attribute of permanence, and that determines only the 'essence' of empirical reality, does not position itself too well within the Brechtian aesthetic. Instead, Epic theatre in theory enables not only the experience of 'truth' but also the possibility for experience to determine, in turn, not just the essence of empirical reality but, ultimately, also its *structure*. For Brecht, this manner of thinking about the potential of theatricality and theatre in this respect is underpinned, at least to a certain degree, by his critical engagement with the epistemological and ontological issues of quantum mechanics, a branch of science markedly more metaphysical and philosophical in its foundations than that which Benjamin critiqued. Also, Brecht understood there to be less of a distinction, and thus more potential creative synthesis, between art and science than Benjamin did, having stated at one point for his friend Max Gorelik that the "boundaries between art and science are not absolutely immutable; art's tasks can be taken over by science and science's by art, and yet the epic theatre still remains a theatre" ('A Little Private Tuition' 161).

Having by this point, however, devoted a significant amount of time to the consideration of gestus in terms of character, its quotable nature, and its role within

Epic theatre as a whole, and so therefore largely through the critical lens of Benjamin, it is now worth examining another aspect of gestus. Whilst the relation between spectator and stage in terms of perceptual comprehension and meaning has been analysed, the temporal aspect of the experience is yet to be addressed.

2.1.3 Gestus and time

Gestus is not a concept without problematic complexities of its own in theatrical terms. Considering the narrative time of Brecht's plays, which as in cases such as *Mother Courage* can span many years in discontinuity, in conjunction with the phenomenological time of the theatrical experience itself, the exact nature of the gestus is made more complicated. As has been set out, a gestus exists as the perception of a certain action or behaviour in terms of it being fundamentally composed of a series of relations, not least of which is that which exists between the stage and the spectator. Understanding gestus in this manner raises the question of its fixity: observed as one thing in a certain instance, might not the nature of a particular gestus evolve over the course of the play following the introduction of new factors and relations? If any one gestus is unavoidably modified by the process of continued observation then it is impossible to consider it in any manner other than in respect of the play as a whole. Brecht touches upon this idea himself in his discussion of the actor Charles Laughton's approach to the role of Galileo, stating events from the denouement of that play have to be taken into account when presenting the part earlier on ('Short Organum' 198).

Such an approach is, of course, perfectly possible for an actor rehearsing a role in full cognizance of all the details of the play. Considered from the perspective of an audience, though, and particularly a first-time audience, this inclusion of the future in the present is more difficult to understand. On one level, this is because

the audience will not be aware of later situations within the play but also, on another more important level, because it would seemingly conflict with some of Brecht's thoughts on the issues of change and determinism. The suggestion that an action or behaviour of a character at a certain point is either reflective or indicative of something that is, in terms of the performance, yet to occur implies a degree of essentialism or predetermination. One explanation as to how to make sense of this apparent slight contradiction in Brecht's outlook is provided by the Ekkehardt Schall, an actor who performed under Brecht's direction in the Berliner Ensemble, when he discusses the portrayal of character within Brecht's theatre. Schall states, in regard to this issue, that

> [y]ou shouldn't start work on a role with an ideal portrait of a figure or his imagined character. That's putting the cart before the horse. The later figure's character, or even the entire presentation of the later figure, is something secondary, really something that does not concern the actor any more. The figure materialises and becomes whatever the spectator is able to take from the total performance, whatever is transferred to him. (41)

It is the emphasis that Schall places on the idea of a 'total performance' in addition to the critical role of the spectator that makes this statement significant. Brecht does not create concrete characters to be observed and studied by the audience in a range of situations; he constructs an armature of ideas with certain basic functions that the audience (and the actor) then create a more complete figure of through the course of the play. The play performed on stage presents a gestic landscape of bodies and language and establishes itself in relation to the audience, but it is the spectator themselves that determines a particular understanding of the observed event: the play and its figures do not exist in discrete certainty.

Another correlative issue that follows from the notion of Brecht's theatre as being one concerned with 'total performances' is that of how its temporal nature is to be understood. There is, on the one hand, a linear progression that is generally matched by the narrative of the play and that is, furthermore, an unavoidable

consequence of our lived existence within a continuum constituted of both space and time. On the other hand, however, there is also the sense that within Epic theatre Brecht is working to disrupt and challenge the standard politics of perception and understanding in relation to time: in making relations between figures across the performance as a whole key to the understanding of any instant, Brecht's theatre operates with the ultimate end of being several things in one theatrical moment. Rather than presenting a sequence of events in which it is the sequence that is important, as perhaps in Aristotelian teleological plots, Brecht's gestic theatre aims to create a phenomenological experience of a situation whose perceived nature is to be determined, ultimately, by those perceiving it. In this manner, Brecht's underlying belief in the necessary existence of the potential for change finds a form of representation in theatricality of gestus.

It is not, however, solely through the development of gestus that Brecht worked to create a new mechanics of theatre in which the embodied spectator assumed a new, and scientifically reflective, role. The theoretical development of the V-effect is also significant in this regard.

2.2 *Verfremdungseffect*

Alongside gestus, the V-effect is one the most important and widely recognised elements of Brecht's theatre. In contrast to gestus, however, there is somewhat less theoretical confusion within existing criticism as to exactly how the V-effect is to be understood; Brecht, himself, elucidates the concept with relative clarity within his writing. In general terms, the V-effect is a powerful attempt to fundamentally prevent, as with gestus, the uncritical acceptance by the audience of the events revealed on the stage that Brecht saw as being problematic within previous theatres. As Wright describes it, the V-effect "is an instrument for changing reality,

not the object; it is a social device, undoing the effects of reality under bourgeois capitalism. The 'object' is already distorted by ideology: what Brecht is after is to provoke the audience to want to change the social reality" (24).

Influenced to an extent by Brecht's exposure to East Asian theatrical practices, the V-effect is intended to both challenge the notion of mimesis on stage and to redefine the manner in which the actor, the audience, and the content of the play relate to one another, particularly in terms of potential empathy. In 'Short Organum', Brecht notes the use of masks and pantomime with Classical and Asiatic theatre as having created a form of V-effect that prevented empathy with the characters; he also states, however, that whilst these devices create a barrier to empathy they "owed more, not less, to hypnotic suggestion than do those by which empathy is achieved" (192). Brecht wanted to abolish empathy within Epic theatre but equally he also wanted to avoid the control over the audience's thoughts denoted by the term 'hypnotic suggestion'. In his conceptualisation of a new V-effect that would force an open, non-empathetic, relationship between stage and audience, Brecht turns again to notions of spectatorship and societal influence upon knowledge. In a short section of 'Short Organum' that is worth including here, Brecht writes:

> The old A-effects [sic] quite remove the object represented from the spectator's grasp, turning it into something that cannot be altered; the new are not odd in themselves, though the unscientific eye stamps anything strange as odd. The new alienations are only designed to free socially-conditioned phenomena from that stamp of familiarity which protects them against our grasp today. (192)

Concisely, and yet in a manner that also highlights connections to other avenues of thought, Brecht summarises several of the theoretical precepts of his Epic theatre as well as the role of the V-effect in supporting them. Brecht is again emphasising, here, his commitment to the idea of a spectator both critically engaged and granted a degree of agency. By presenting objects or 'phenomena' in manner devoid of

suggestion or sociological mediation, the V-effect, Brecht argues, not only serves to emancipate the theatrical spectator but also creates the potential for change to the status quo or current paradigm. The reference made to an ‘unscientific eye’ also importantly serves to connect the V-effect, and Epic theatre in general, back to the question of what it is to view the world in a scientific way at a time when the nature of observation with science has itself been brought into question on numerous levels.

In the context of the passage above, it is the idea of a scientific eye, or manner of viewing something, that enables advancement in conceptual understanding that Brecht is interested in. For him, progress in science is the result of “suspicious inquiry” into the nature of phenomena perceived with a sense of critical “amazement” and the subsequent realisation that the observed behaviour is inadequately explicable by means of the existing conceptual models (‘Short Organum’ 192). To elaborate upon this, Brecht returns once again to the historical figure of Galileo and claims that his explanation of a pendulum’s motion was first enabled by his observation of it with a “detached eye” that perceived this mechanical behaviour as new and unexpected (192). The V-effect is intended to refigure theatricality so as to enforce this form of spectatorship within the Epic theatre and, in so doing, to also incorporate the principles of dialectical materialism to which Brecht subscribed (193). Significantly, too, Brecht speaks of dialectical materialism as being a “social scientific method” (193); in his allusion to “society’s laws of motion” (193), Brecht’s interest in the notion of science both as a specific field of knowledge and, more generally, as a form of enquiry is evidenced.

The V-effect, and therefore also the possibility of detached eye, is achieved within the Epic theatre by several means; it is also fundamentally entangled with the mechanics of gestus. In ‘Short Organum’, Brecht’s explicit focus on the creation

of the V-effect is in terms of the actors' relation to the roles that they are playing. The audience, Brecht argues, will be unable to lose themselves in empathy if their attention is drawn to the fact that they are observing something that is self-consciously a play (195-196). As has been noted, the aim for the actor in the Epic theatre is not to become the part that they are performing but, rather, to perform in such a manner that both the actor and the character are present on the stage as, for example, Charles-Laughton-playing-Galileo or Helene-Weigel-playing-Mother-Courage. The role of the actor is not to mimetically become the character and so enable audience identification with them; instead, their task is to present a figure so that a spectator over the course of the play can, through critically-engaged observation, create a concept 'character'. This, therefore, leads back to the basic principle of gestus: the behaviour and state of the bodies on stage is determined by the full set of relations of which they are a part.

Accordingly, as with gestus, the issue of the embodied and material nature of the theatrical event is important to both the way in which the V-effect is achieved and how it can be understood. As has been noted, the term *Verfremdungseffect* is often translated into English as 'alienation effect' or 'A-effect', most influentially by John Willett. The notion of alienation is not completely unrelated to the effect that Brecht wished to create in his theatre but it also suggests a sense of negative separation or detachment that does not fully fit with his intentions. Furthermore, due to the nature of Brecht's political views, the term 'alienation' also risks inviting a false conflation with the Marxist understanding of alienation. Certainly, Brecht wanted to prevent the audience from empathising with characters and situations but, equally, he did not want to estrange them from what they were seeing. In fact, the V-effect is similar in numerous respects to the Russian Formalist concept of *ostranenie*, a term that is commonly translated as 'de-familiarisation'. In 'Art as

Technique' Viktor Shklovsky proclaimed that the function of de-familiarisation in art is to enable the perception of something as it is in itself, and not as it is known: to "make the stone *stony*" (12). There is a certain degree of overlap to be found between that idea and Brecht's desire to inspire amazement in the theatre audience and to display behaviours and actions freed from dogmatic explanation.

To argue that Epic theatre and its V-effect operate upon exactly the same principles as Formalist de-familiarisation would, however, be to delimit falsely the scope of enquiry and to ignore the dialectical drive for progress within Brecht's formulation of theatricality. In positing a difference here, the key factor to be taken into account is the physical and embodied nature of theatre as a phenomenological event. The approach of the Russian Formalists, Shklovsky in particular, in art was to restore a certain 'freshness' to the perception of the object, to present it to the audience in its essential form; as such, there was no place for the older and more familiar image. The success of the V-effect, by contrast, depends upon an almost paradoxical duality that is also, to some extent, inherent within its theatrical praxes: Brecht wants to show that which has been made strange but he also wants the familiar to maintain a presence, so as to demonstrate the tension between them. The relation between the familiar and the unfamiliar is a means for Brecht to show a dialectical materialist mechanics of society, embodying its belief in regarding "nothing as existing except in so far as it changes, in other words is in disharmony with itself" ('Short Organum' 193). The V-effect, and gestus, underpin this in performative terms in that on the stage there must physically be something that is at once familiar whilst also strange and conducive to a sense of amazement.

This sense of amazement and the potential that it has to effect significant change does not, however, receive treatment and examination from Brecht through his theoretical considerations alone. Indeed, one of his most potent engagements

with this subject is the play *Galileo* which draws together issues of speculative amazement, epistemology of scientific knowledge and method, and the position and role of these within society.

3.0 The birth of modern science: *Life of Galileo*

Begun in 1938, during the Scandinavian period of Brecht's exile from Germany, *Galileo* is, in addition to being one of his most well-known plays, one of the ones that he worked on the longest. In early 1939, Brecht wrote to Elizabeth Hauptmann announcing that he has "just finished a play, *The Life of Galileo*, maybe it can be put on somewhere" ('To Elizabeth Hauptmann' 298); the play does not remain "finished", however, and in the autumn of 1946 Brecht informed Bentley that he would soon be sending him the "latest version" of the play ('To Eric Bentley' 410). Given the subject matter of *Galileo*, the most significant turning point in the development of the play came following the atomic devastation of the cities of Hiroshima and Nagasaki at the conclusion of World War II, with Brecht noting that the piece had quite suddenly acquired a new significance ('Constructing a Role' 155). In its examination, from the vantage point of the twentieth century, of the life and career of a Renaissance scientist, *Galileo* could not remain the same play for Brecht after 1945: a period of remarkable theoretical progress had seemingly just found a lethal apotheosis in the form of the atomic bomb.

Positioning *Galileo* within the context of World War II and the advent of the new threat of nuclear conflict, many critics see Brecht's play as being primarily concerned with the social responsibility of scientists and with political ideology (Paulsell 272). Whilst there is certainly much to be said for this reading of *Galileo* it is, however, also slightly narrow in its scope and fails to take critically into account the many other issues raised within the play as well as the fact of its pre-1945

existence. That Brecht initially wrote the play before the military potential of atomic theory became apparent is, though, indicative of the fact that his interests in scientific discovery extended beyond the purely social. Accordingly, whilst Moss correctly notes a shift from a first version of *Galileo* that portrays "the scientist as optimist on an exuberant quest for empirically verifiable truth, believing unquestioningly in science and trusting in *reason* through sensual experience" (136) to a second one in which this optimism is shattered by the realisation of enlightenment's destructive potential (138), the play also has a constant concern with more than 'the scientist'. *Galileo*'s depiction of the figure of the scientist is rooted in a more general interest in, and engagement with, the nature of the scientific project as a whole; and, in particular, this chapter will argue, the role of observation within scientific discovery is of particular importance.

A play, as Barnett states, "about what might be called the birth of the modern scientific age" (18), *Galileo* is concerned with more than simply the question of the scientist within society: it is about the issues surrounding how we view and understand the world. Barnett argues that the scientific age that the play introduces, that which is underpinned by Renaissance and Enlightenment reason, is not the same one that Brecht refers to in 'Short Organum' (18); that suggestion, however, is to be challenged here. The "new science" of Marxism that Barnett holds to be the one that Brecht developed a theatre for (18) was, undoubtedly, of importance to the playwright but his interest was not so specific. Brecht's scientific age was one defined by neither Marxism nor natural philosophy alone; the term referred, instead, to the period that has seen the ascendance to dominance of a particular scientific way of seeing the world, and the wider universe. The task of this chapter is now to elaborate more fully on what is denoted by the term 'scientific seeing', to establish how and why this was of such significance to Brecht, and to

consider how these questions are handled within *Galileo* both conceptually and in relation to the theatricality of Epic theatre.

3.1 The cultural milieu: moving away from causality?

Several factors justify the consideration of Brecht's theatre, and *Galileo*, as being a serious engagement with issues and questions concerning the nature of scientific knowledge and enquiry. Foremost amongst these is the fact that, perhaps more explicitly than any of his contemporaries, Brecht displayed a clear and critical interest in science. His abiding interest in the advancement of scientific knowledge and their impact (Parker 392) is manifest in his letters, journal entries, theory, and plays, as well as through his direct interaction with some of the figures in question. The social and cultural settings within which Brecht lived and worked, particularly the years leading up to and including World War II, are also significant in terms of the attitudes and ideas that were circulating and the influence that these had.

Indeed, the decades following the conclusion of World War I saw a remarkable permeation of science into the discussions and ideas of non-scientists, and notably too amongst those cultural and intellectual figures. In an excellent recent study of the Surrealist movement and science, the art historian Gavin Parkinson sets out clearly the "engagement throughout Surrealism with Relativity and quantum mechanics between the wars followed by a rejection of nuclear physics in the era of the Cold War" (8). Whilst acknowledging that what he broadly terms as "the new physics" and Surrealism are on one level located within different milieu, Parkinson argues, however, that within the larger context of post-war Europe the two were connected by a comparable "epistemological radicalism" (11). If the Surrealists too, at least initially, reacted with enthusiasm to the episteme-rupturing implications of General Relativity and quantum mechanics then it is also important to observe that

there was also a more concerned response to the same advances. For instance, in a letter to his close friend Gershom Scholem in the early 1930s, Benjamin quotes a passage from physicist and popular scientist Arthur Eddington's 1928 *Nature of the Physical World*, and claims that in the language used "you can virtually hear Kafka speak" (223). The implications of a Kafkaesque scientific description of the physical world are clear enough; slightly later in the same letter, though, Benjamin once again makes reference to modern physics, but in a manner that forges a comparison of sorts between it and the threat of contemporary warfare:

> If I were to say, as I just did, that there was a tremendous tension between those of Kafka's experiences that correspond to present-day physics and his mystical ones, this would only amount to a half-truth. . . The long and short of it is that clearly an appeal had to be made to nothing less than the forces of this [mystical] tradition if an individual (by the name of Franz Kafka) was to be confronted by *that* reality of ours which is projected theoretically, for example, in modern physics, and practically in the technology of warfare. (224)

Here, then, is evident both a not entirely positive reception of the world picture painted by physics, as well as a foreshadowing of the feared connection between theoretical science and actual weapons of mass-destruction that would later have such an impact upon not only the Surrealists but Brecht as well.

In any case, it is clear that Brecht was not entirely anomalous amongst non-scientific society in his interest in the physical sciences at the time. Indeed, it is to be argued that plays such as *Galileo* were only possible in practical terms because of this new intermingling of otherwise rather distinct milieu. One of the facilitating factors to this change was an immense surge in the publication of books and magazines that presented new scientific ideas to the general public in non-specialised language; the book by Eddington that Benjamin refers to is a good example of this. The demand for such publications in the first half of the twentieth century came on the back of a resurgence of interest amongst general society in the natural sciences that had been largely unseen since Darwin published his theory of evolution and offered a radical new explanation as to human origin. There

was a relatively identifiable trigger to this development in interest. Despite the wide range of ground-breaking work being done in the early 1900s, public and media attention was predominantly focused on the figure and theories of one man: Einstein. Breakthroughs such as Planck's notion of quanta in 1900 and Bohr's insight into the structure of the atom were important within academic circles; it was Einstein, though, that captured the imagination of the wider public, with The Manchester Guardian even commenting upon the impact of the theory of relativity upon the average civilian (Alan Friedman and Carol Donley 19). With the development of the theory of General Relativity, the young German patent clerk seemed to have almost single-handedly overturned a scientific paradigm and model of the universe that had been in place since Newton.

Einstein was certainly important within Brecht's thought: in 'Katzgraben Notes' he alludes to the potency of theory (251) and proclaimed to Mordecai Gorelik that he was "the Einstein of the new stage form" (qtd in Willet, *The Theatre of Bertolt Brecht* 176). The impact of Einstein upon Brecht is most evident in the fact that, shortly before his death, Brecht was researching and drafting a play to be entitled *Life of Einstein*, a play that sadly exists only as a collection of notes and fragments generally left unexamined. Less explicitly, however, as Paulsell has argued, Einstein and his approach to science were also influential in the writing of *Galileo* and *"*his presence", although not material within the play, "can be felt unmistakably by those who are viewing critically" (267). Of greater significance in terms of Brecht's overall creative and intellectual interest in the question of science as, essentially, a branch of philosophy, was the development of a quantum mechanics over the course of the 1920s. Making fewer headlines than Einstein's work, due in part to its breadth and also the lack of any one 'star figure', quantum theory and mechanics provided an even greater challenge to epistemology of science and the

manner in which we understand our relation to the world (Donley and Friedman 110-111).

Quantum theory, as has been noted in Chapter One, has its roots in the work of the German physicist Planck at the turn of the twentieth century. Einstein's research into the photoelectric effect provided another stepping stone, as did Bohr's work on atomic structure; it was not until the latter half of the 1920s, however, that a quantum mechanics was first more fully developed in order to try to explain the behaviour of nature at the subatomic level. Particularly instrumental to that were Bohr and Heisenberg who, working together in the years 1925-1927, created what is sometimes termed as the Copenhagen interpretation of quantum theory. The Copenhagen interpretation is not a single work or idea but, rather, a way of approaching the physics of quantum world, and one that accords strongly with theoretical standpoint of those two physicists: the "*Kopenhagener Geist der Quantentheorie*", or 'Copenhagen spirit of quantum theory', was how Heisenberg described it a few years later when introducing his *The Physical Principles of the Quantum Theory*, in which he outlines the new mechanics ('Preface'). There have been other interpretations advanced since then, including Bohm's pilot wave theory, but for much of the first half of the twentieth century it was the Copenhagen interpretation that was dominant.

Central to the Copenhagen interpretation is the adoption of the idea of indeterminacy as being foundational within the new physics that was taking shape, as well as a move away from the principle of causality within mechanics. Writing in 1932, Bohr sets one of the main issues of quantum mechanics in that regard:

> The causal mechanical coordination of experience can be accomplished only in cases where the action involved is large compared with the quantum and where, therefore, a subdivision of the phenomena is possible. If this condition is not fulfilled, the action of the measuring instruments on the object under investigation cannot be disregarded and will entail a mutual exclusion of the various kinds of information required for a complete mechanical description of

> the usual type. This apparent incompleteness of the mechanical analysis of atomic phenomena issues ultimately from the ignorance of the reaction of the object on the measuring instruments inherent in any measurement. Just as the general concept of relativity expresses the essential dependence of any phenomenon on the frame of reference used for its coordination in space and time, the notion of complementarity serves to symbolize the fundamental limitation, met with in atomic physics, of the objective existence of phenomena independent of the means of their observation. ('Light and Life' 7)

The notion presented here is the same one that the philosopher in Brecht's *Messingkauf* refers to: the difficulty in maintaining a clear distinction between the observer and that which is being observed. Bohr's emphasis in the challenge to 'causal mechanical coordination' and 'a complete mechanical description' is significant in that it highlights one of the contentious aspects in the debate surrounding quantum theory, provides a connection to Brecht, and also allows for consideration of the cultural moment within which it took shape.

Causal mechanics and their ability to describe fully the perceivable universe were central to the advancement of Enlightenment thought and science that had emerged with the aid of key thinkers such as Galileo and Newton. This strongly positivist form of science operated on the assumption that the conscious human mind was somehow intrinsically separate from material existence and would ultimately be able to provide a full explanation, via a set of causal laws, of a universe that was out there waiting to be described. Quantum theory went against this belief and demanded instead, considering subatomic behaviour of matter, the adoption of an acausal, statistical, mechanics that no longer upheld a determinist model. Not only would this move away from determinism come to feature repeatedly in Brecht's thought; it is also noteworthy that this paradigm shift was, with notable exceptions such as Bohr, Louis de Broglie, and Paul Dirac, largely instigated by a cluster of German-speaking scientists. Even more significant, perhaps, was the fact that this shift was very much framed and understood at the time as being a form of crisis or schism within science, and one that concerned

some of its most fundamental principles. “Conflict”, contends Parkinson, “seemed to be the order of the day at the end of 1926 as a general dissatisfaction settled on the warring parties about the means to unite the various successful theories and conceive a satisfactory fit between laboratory experience and equations describing atomic processes” (33). That Parkinson’s language here is replete with militant connotations is rather apt on more than one level. In a Europe that was at the time, still reeling from World War I and whose art, politics, and culture were dominated by a zeitgeist of rupture and crisis, physics was no exception. Moreover, within that particular historical moment it is also necessary to note that not only was there a diffusion of scientific issues beyond the usual bounds of that field, as was observed above, but there was also a reciprocal action and influence of sorts.

It is important at this point, therefore, to briefly set out and examine some of the debate that has surrounded the potential influence of the society and culture of 1920s Germany in regard to the birth of quantum mechanics. Occupying an important position within this debate is an extensive study, published by Paul Forman in 1970, entitled ‘Weimar Culture, Causality, and Quantum Theory, 1918-1927: Adaptation by German Physicists and Mathematicians to a Hostile Intellectual Environment’. In this study, Forman, a former student of Kuhn, makes the case that quantum mechanics was able to develop, and be accepted as an acausal and statistical mechanics, in Weimar Germany due to particular attitudes displayed towards physical scientists within the wider cultural milieu. Forman presents a range of evidence that he sees as being indicative of a shift, amongst Weimar physicists, away from strict adherence to belief in causal determinism even before the formulation of a quantum mechanics began in the mid-1920s.

The crux of Forman’s argument rests upon the idea that Weimar culture, following World War I, was one that placed a certain pressure upon physicists and

mathematicians to distance themselves from old models of understanding. According to Forman, the "relevant question is . . . what image the educated public held of the physical scientist and his world view. The image of the mechanistic, rationalistic causality led inevitably to a negative valuation" ('Weimar Culture, Causality, and Quantum Theory', 105). Forman does not make it fully clear as to exactly why he thinks that this is the case; he makes some effort, however, to connect it partly to the public reception of Spengler's *The Decline of the West* (in which physical science is described as coming to its end, disintegrating, and metamorphosing into a form of new mytho-religiosity) and also to a prevailing sense of general crisis. The resulting willingness, or even eagerness, to accept "anticausal interpretations and inflations of its significance for the issue of determinism" were, according to Forman, limited to German-speaking Europe ('How Cultural Values Prescribed the Character and the Lessons Ascribed to Quantum Mechanics' 207).

Forman's methodological approach has more recently been criticised by scholars such as M. Norton Wise (415) but it has, nevertheless, prompted a lively, ongoing, discussion and also provided a certain amount of useful information as to the perception of physics beyond that of the scientific community at the time. The exact nature and influence of the latter is debatable, with Arne Schirrmacher showing that, despite the claimed hostility toward science, there was in fact a significant rise in the circulation of popular science magazines in the Weimar period (439), but the point in either case remains that there was some form of wider interest in issues pertaining to science. The relevance of this area of debate in relation to Brecht's *Galileo*, and also his conception of theatricality more generally, is that it establishes a precedent for considering him in meaningful conjunction with scientific ideas. Living and writing in Germany during that period, Brecht would

have been part of that same cultural milieu as were the founders of quantum mechanics. Brecht's own stance on positivism and causality is not always clear, but it is interesting to consider how this interrelation between scientific thought and cultural trends may have impacted upon his work and the way in which he responded to certain ideas. Further to the analysis of Brecht's theoretical writings, the influences of these scientific concepts can also be uncovered through a close analysis of the play *Galileo* and the notes that he was making over the course of its writing and revision.

3.2 Sight, knowledge, and determinism in *Galileo*

In the opening scene of *Galileo* the scientist scolds the young Andrea for not looking at things correctly, "You can see, indeed! What can you see? Nothing at all. You just gawp. Gawping isn't seeing" (9). Galileo is responding to a statement that his student has made during a discussion of the Copernican model of the solar system. Presented with the notion of the Earth moving around the sun, Andrea initially objects, due to what he holds to be sound empirical evidence: "But I can see with my own eyes that the sun goes down in a different place from where it rises. So how can it stay still? Of course it can't" (9). Andrea's first statement is, of course, not wrong; he, and anyone else, can indeed see that the sun rises and sets in different places. There is, therefore, no problem with Andrea's sight as a basic function and so the issue here lies instead with the fact that he makes uncritical use of his observation to deny immediately the possibility of a stationary sun. This is, in many ways, similar to Brecht's criticism of passive observation within the theatre: the perceived fault with both Andrea and the audiences of Aristotelian theatre is that they simply accept that which is presented to them, and the familiar explanation of that, rather than entertaining the notion that it might be otherwise.

Galileo demonstrates how the sun can appear to move and yet stay still by involving Andrea in a physical demonstration:

> GALILEO. […] *He puts the iron washstand in the middle of the room*. Right: this is the sun. Sit down. *Andrea sits on one of the chairs*, *Galileo stands behind him*. Where's the sun, right or left of you?
>
> ANDREA. Left.
>
> GALILEO. And how does it get to be on your right?
>
> ANDREA. By you carrying it to my right, of course.
>
> GALILEO. Isn't there any other way? *He picks him up along with the chair and makes an about-turn*. Now where's the sun?
>
> ANDREA. On my right. (9)

Galileo's demonstration to prove to Andrea the limitations of gawping is grounded in the notion of planes of reference, but it also importantly presents the idea that progress in the scientific method demands a reassessment of the way in which observation is performed and understood.

From the outset, then, Brecht unites the themes of observation and science and brings them to the forefront of the play. Galileo, a figure often used as the exemplar of the critical observer and herald of a new age within Brecht's theoretical writings, appears on stage as one committed to encouraging a de-familiarising mode of seeing. There is a distinct similarity between the consideration of science within *Galileo* and Brecht's own thoughts on theatre. That which makes the play particularly interesting conceptually is that, although ostensibly about "the birth of science" (Brecht, *Journals* 356) in the seventeenth century, it was written in the twentieth century during a second scientific revolution that both Brecht and his audiences were well aware of. Paulsell goes so far as to argue in this respect that

> In the atmosphere of scientific curiosity prevalent in Berlin, indeed in the world, of the 1920s and 1930s it is difficult to imagine that Brecht's audience would not have drawn certain parallels between Galileo's pursuit of 'truth' on stage and the epistemological battle raging in the real world outside the doors to the theatre. (272)

The conflict between the church and Galileo is, therefore, but one of the tensions that underpin the play; the other is that between Galileo's science and the physics of Einstein, Bohr, and Heisenberg.

Within *Galileo*, Brecht presents the idea that there is a positive correlation between enhanced vision and the possibility of increased knowledge. The newly invented telescope does more than simply enable Galileo to get his wages raised: it also facilitates greater observations of the nature of the moon and other celestial bodies. These more detailed insights into the various attributes of the moon, and of Jupiter and its moons, in turn help to support Galileo's more general Copernican hypothesis. This model of augmented vision and perception leading to a more comprehensive description of the universe exemplifies well the positivistic, mechanical determinist, outlook of science that would dominate the next three centuries. The physics of Einstein and the quantum theorists placed the validity of this philosophy in crisis: greater ability to see exposed a limit to our ability to describe; Brecht was aware of this and the idea would have also been familiar to many in the audience. The fact that the progress of science is shown, in *Galileo*, as being both revolutionary and yet also grounded on principles or methods that either were, or were proved to be, problematic is, accordingly, of some interest.

Returning to the initial illustration by Galileo of the possibility of the earth orbiting the sun, the success of this demonstration depends upon a differentiation between two different fields of visual reference. Galileo proves to Andrea that if he is willing to suspend his conviction that he is both central and motionless then the apparent behaviour of the sun can be differently described. Holding this different way of viewing the Earth in relation to the sun as being the more correct is then later justified by the discovery of supporting astronomical data. This mode of intellectual advance works at this level but it reaches an end-point in some elements of

quantum mechanics: antithetical explanations might both be true. If a twentieth-century Andrea claimed that light existed as waves whilst a twentieth-century Galileo asserted that it was particulate there would be no means prove that either one was correct: a performance of the two-slit experiment would simply provide visual evidence of both being the case; light behaving simultaneously as both wave and particle.

The wave-particle duality that embodies Bohr's concept of complementarity connects also, within the discourse of quantum mechanics, to the notion of indeterminacy and uncertainty. As has been stated already, important to these principles is the fact that when we try to ascertain and describe the behaviour of elementary particles at the subatomic level our ability to do so is limited by the instruments of our 'sight'. Exact description has had to give way to very accurate prediction. This issue is, for obvious reasons, not explicitly present within *Galileo*; Brecht does however provide a foreshadowing of this issue by means of Galileo's own problematic faith in the human senses, sight in particular. Galileo's discussion, or confrontation, with representatives of the church hinges around the crux point of visual evidence in relation to the acceptance or rejection of his theory:

> GALILEO *almost obsequiously*. Gentlemen, to believe in the authority of Aristotle is one thing, tangible facts are another. You are saying that according to Aristotle there are crystal spheres up there, so certain motions just cannot take place because the stars would penetrate them. But suppose those motions could be established? Mightn't that suggest to you that those crystal spheres don't exist? Gentlemen, in all humility I ask you to go by the evidence of your eyes.
>
> MATHEMATICIAN. My dear Galileo, I may strike you as very old-fashioned, but I am in the habit of reading Aristotle now and again, and there, I can assure you, I trust the evidence of my eyes.
>
> GALILEO. I am used to seeing the gentlemen of the various faculties shutting their eyes to every fact and pretending that nothing has happened. I produce my observations and everyone laughs: I offer my telescope so they can see for themselves, and everyone quotes Aristotle. (41)

Galileo is, here, in a strong position from a certain scientific point of view: he is refuting an old theory with a new one and he has ‘tangible facts’ to support his hypothesis. The ‘evidence of your eyes’, as Galileo argues, can provide proof of the need to move on from existing understanding and knowledge. On the one hand, then, this exchange is concerned with the value of observation in a physical sense; on the other hand, Galileo is not really trying to convince the mathematician of the fact of the evidence itself so much as he is attempting to persuade them to adopt a new, scientific, mode of seeing. Both men are very clear on the fact that they trust in that which they can see; the problem facing Galileo is that the mathematician and his colleagues refuse to view anything with a sense unfamiliarity or amazement. Aristotle’s philosophy and Galileo’s astronomical observations are brought into conflict, with Galileo rightly positioning a belief in the ultimate authority of Aristotle as being incompatible with new data. The problem in this instance is, therefore, a resistance to the idea of change as well as a refusal to observe with a scientific eye, as an emancipated spectator.

The conflict between Galileo and the Church as a dogmatic institution, as Brecht presents it, is essentially an ideological one, and one that in many respects epitomises Kuhn’s argument regarding paradigm shifts in science (Shepherd-Barr 28). Both parties believe in the power of their ‘five senses’ but, in contrast to Galileo, the agents of the agents of the Vatican refuse to utilise their powers of perception in a manner that will undermine existing church doctrine and instigate a radical change in people’s perception of existence. A later conversation between Galileo and Barberini, a cardinal (and, later, pope) who is a more open-minded mathematician, adds, however, an interesting complication to this issue; one that focuses more on the physical nature of scientific observers and of another form of familiarity. Barberini does not question Galileo on how he was able to make his

observations, nor does he seek to challenge the scientist from an Aristotelian point of view, instead he enquires into the issue of the basic form Galileo's theorising and mechanics:

> BARBERINI. […] Are you sure, Galileo my friend, that you astronomers aren't merely out to make astronomy simpler for yourselves? *He leads him forward once more*. You think in circles and ellipses and constant velocities, simple motions such as are adapted to your brains. Suppose it had pleased God to make his stars move like this? *With his finger he traces an extremely complicated course at an uneven speed*. What would that do to your calculations?
>
> GALILEO. Your Eminence, if God had constructed the world like that – *he imitates Barberini's course* – then he would have gone on to construct our brains like that, so that they would regard such motions as the simplest. I believe in men's reason." (58)

Two important points are raised here: first is that both men still seem to accept the notion of a universe created by God that behaves in a certain, determined, manner; second is the idea that the forms that scientific theories take are influenced by the way in which our brains are 'constructed'. Making this dialogue particularly interesting, however, is the fact that whilst this debate is framed within seventeenth-century Italy it is also an almost verbatim retelling of an anecdote used in a twentieth-century lecture. After Brecht attended Reichenbach's lecture on determinism in 1942, one of his numerous journal entries concerning what he had heard reads as follows:

> our system of causes is limited by a kind of reproducibility which einstein once expressed as follows: he described very irregular and rhythmically unstable movements with his finger and said, for instance if the stars moved like that, there would be no astronomy. (although they would no doubt have good causes for doing so.) philosophers get irritated by heisenbergs's proposition, according to which points in space and points in time cannot be coordinated. even if this had identified a limit beyond which descriptive methods theoretically cannot be 'improved', the philosophers would still be left with the question of the possibility description, so that their proposition that nothing happens without causes would still stand. the physicists have overturned it by demonstrating its emptiness; they just abandon it. grounds that cannot be established theoretically are not grounds for them at all. (208)

The consideration of these two passages together reveals Brecht to have implicitly established within Galileo a sequence of epistemological and ontological concerns

of science that extend, conceptually, to his contemporary setting. Firstly, there is Galileo's evident attempt to decentre the Earth within the universe and thus to instigate a paradigmatic shift from mediaeval Aristotelianism to modern science. Secondly, even as that first transition is being presented, Brecht also, through the discussion between Barberini and Galileo, broaches a question that is associated within his thought with the challenges posed to this form of scientific theory and method by the work of those such as Bohr and Heisenberg.

Barberini and Galileo, effectively speaking as Einstein, present the notion of a deterministic, causal, universe whose behaviour it is possible to describe because there is a fundamental harmony between its structure and the way in which people think. Galileo's belief in "men's reason" is, essentially, a belief in the capability of the scientific project to provide a full description of the universe. Einstein is also generally seen as being a champion of determinism who had difficulty accepting the arguments of the Copenhagen interpretation (Heisenberg, *Physics and Philosophy* 43); and indeed, he spent most of his life trying to prove the incompleteness of quantum mechanics in favour of a hidden variable model. The problem with Galileo's claim about the construction of the human brain is that, considering the play in relation to the context within which Brecht wrote it, quantum theory gives Barberini's question greater critical weight as Heisenberg's theory establishes a limit to precise human knowledge grounded in the embodied nature of our existence. The quantum mechanical answer to Barberini's question as to what non-classical behaviour might do to Galileo's calculations would be that they must become statistical.

Taking this into account, and considering *Galileo* as an example of Epic theatre (albeit, even in Brecht's mind, not the strongest one in terms of form (*Journals* 350)), there emerges a distinction between the science of Galileo and science of

Brecht's theatre. Galileo is concerned with the introduction of a science of causality and determinism whilst Brecht's imagination, as has already been outlined to a degree, was captured by the problems and potential arising from the apparent end of this system of thought. Indeed, the days following Reichenbach's lecture witnessed a flurry of journal entries by Brecht. The state of affairs within the philosophy of science that were prompted by quantum mechanics were received positively by Brecht, "i like the world of the physicists" he wrote, the day following the lecture, "men change it, and then it looks astonishing" (209). Within this new world of the physicists, Brecht also sees greater possibility and scope for change; he argues that

> we can appear as the gamblers we are, with our approximations, our to-the-best-of-our-abilities, our dependence on others, on the unknown, on things complete in themselves. so once again a variety of things can lead to success, more than just one path is open. oddly enough i feel more free in this world than in the old one. (209)

For Brecht, therefore, this new scientific paradigm, with a perceived recognition of its own descriptive limits, accorded well with his more general belief in the constant change proposed by dialectical materialism. That Brecht, here, claims that he feels more free is especially interesting when held in comparison to the character Galileo's declaration in that "[t]he universe has lost its centre overnight, and woken up to find it has countless centres. So that each one can now be seen as the centre, or none at all. Suddenly there is a lot of room" (8). Given that Galileo is reacting to the first scientific revolution and Brecht to the subsequent one, the degree of similarity between their two responses, despite the fundamental differences between the scientific principles concerned, suggests that for Brecht a crisis in the scientific episteme can be marked by an affirmation of openness or freedom.

Celebration of decentring, of a more open universe, of approximation, and of interdependence, cannot of course be assumed to be the universal response to

onto-epistemological upheaval. Such intellectual moments find definition in discord and resistance on numerous levels, as *Galileo* clearly works to show. Equally, at the same time as Brecht was announcing his general satisfaction with the new scientific world model, he observes his friends and fellow German émigrés Adorno and Horkheimer to be

> still ruminating over reichenbach's lecture. the physicists' announcement that they have discovered processes in the microcosm that are not amenable to the causal relationships with which we are familiar, visibly irritates them, because the physicists have also gone over to the attack, contemptuously handing over to metaphysics - with fire-tongs - the postulate that the law of causality might be recognised even where it cannot be theoretically postulated. the philosophers insist doggedly it is possible to conceive of grounds that you cannot conceive of. (209)

Brecht is not especially clear, here, in his explanation as to why Adorno and Horkheimer are so irked by the ramifications of quantum mechanics; it seems, however, that it is the fresh convergence of physics and metaphysics that troubles them. These two schools of thought and enquiry were kept apart within a positivist outlook but the quantum theorists reintroduced a great degree of philosophical consideration into the field of theoretical physics. Just as *Galileo* presents discomfort and hostility to a new scientific theory which will have a deep impact outside the parameters of its own discipline, so too does this journal entry of Brecht's suggest an irritation at a development in science because it is forcing critical re-evaluations of that which was previously familiar across the wider intellectual and cultural sphere.

Following on from this, some attention must accordingly be given to the question of the relationship between science and society within both Brecht's thought as a whole, but also within *Galileo* and the planned later play *Einstein*. Whilst this chapter still contests the idea that *Galileo* is primarily concerned with the social responsibility of science, Brecht's own commentary and the gestic nature of his

theatre itself do inextricably entangle the issues of scientific observation with their broader milieu.

4.0 "One doesn't have to understand the world to destroy it": *Life of Einstein*

The gestic nature of Brecht's theatre makes physically apparent to the audience the fact that Galileo and his work exists and can be understood only in relation to the other subjects on stage, as well as to themselves. The theatrical nature of the play enforces, in this manner, the idea that, regardless of the degree of intellectual idealism with which it is pursued, scientific progress can never be held entirely distinct from its social context. The arrival of the telescope in Florence enables Galileo to set out a more concrete, evidence-based, argument for his Copernican theory; his relationship with Andrea, a youth to whom he can demonstrate new ideas by literally picking him up and turning him a different direction, implies a move forward. Equally, however, there are less positive relations between Galileo's ideas and powerful societal institutions, as is seen in Barberini's discussion with the Inquisitor, and in the scientist's own public recantation.

Brecht's Galileo adheres throughout much of the play to the notion that science can exist and advance essentially autonomously; he proclaims, dropping his favoured pebble to the floor, that he believes in "reason's gentle tyranny" (29). Within *Galileo* there is also, however, a greater and not always so gentle tyranny: that of the dominant institution and ideology of the time. Whilst Galileo's reasoning does ultimately find acceptance, Brecht's play demonstrates that it cannot necessarily be held that science can view itself as being independent and in control of itself. For this reason, Barberini's dialogue with the Inquisitor regarding Galileo is particularly interesting. Before becoming pope, Barberini had previously been a cardinal and a mathematician; asked to demand that Galileo recant his theory,

Barberini's initial reaction, true to his intellectual principles, is to refuse. Over the course of the conversation and donning of his papal robes, however, Barberini's position is reversed, a decision that in the physical staging of the play appears to owe something to the fact that the dialogue is not a dialogue in the strictest sense of the word:

> THE POPE: This shuffling is getting on my nerves. I cannot help listening to it.
>
> THE INQUISITOR: It may speak to you more persuasively than I can, your Holiness.
>
> ……
>
> THE POPE: […] All this stamping in the corridors is really unbearable. Is the whole world coming in here?
>
> THE INQUISITOR: Not the whole of it but its best part.
>
> *Pause. The pope is now in his full robes.*
>
> THE POPE: At the very most he can be shown the instruments.
>
> THE INQUISITOR: That will be enough your Holiness. Instruments are Mr Galilei's speciality. (93-94)

The Inquisitor is not wrong in emphasising the influence of the unseen third party in their conversation, Barberini's change of mind is figured by Brecht to appear in direct relation to both the unbearable pressure of the powerful within the Church and also his visual transformation into the pope. Scientific principles are subordinated to ideological pressure and expectation. Galileo's recantation in the face of the instruments of torture shows, similarly, a form of submission on the part of science to the dominant forces in society.

In the wake of Hiroshima and Nagasaki, Galileo's recantation assumed a different and more pointed significance: a change that, as has already been noted, Brecht commented upon in regard to how his central character might be understood. On one level, an optimistic scientist's faith in the power of reason is checked by an ideologically conservative Catholic church; on another level, post-1945, the fact that Galileo relinquished his theory to the inquisition came to be seen

as a comment on the possible naivety of scientists with regards to their understanding of societal mechanisms. This general idea is outlined by Brecht himself in a description of his collaboration with Laughton on the play:

> as i work out a stage version with the actor laughton who has no political thoughts whatsoever, alongside the theme that in this form of society a desire for knowledge can be fatal (since society both produces and punishes it) another theme emerges, namely the decisive difference between 'scientific progress pure and simple' and science's social and revolutionary progress. (*Journals* 350)

The 'decisive difference' that is mentioned here is an important term. This difference, as Brecht sets it out, is between the progress of science insofar as it concerns only that which is within the sphere of that discipline, and scientific progress in terms of its reception and utilisation by society. For the figure of Galileo within the play, the problem is that the rate of his advancement of conceptual scientific knowledge is not congruent with the progress that his society will allow him to make in terms of social impact of the scientific theory.

Galileo, though, as much as it may foreshadow and embody certain twentieth-century issues, is a play concerning what Brecht saw as the birth of modern science and it does not directly engage with the catastrophic potential afforded to society by its later form. In *Galileo*, Brecht establishes the fundamental idea of this seemingly inherent difference between the two forms of scientific progress; it is in *Einstein*, however, that he planned to engage more explicitly, and more critically, with the apotheosis of the issue. Indeed, Fredric Jameson in *Brecht and Method* also identifies this as being a concern shared by the two plays, arguing that that which is established in both works is

> not so much an analogy between the advances of the natural sciences and our capacity to think and resolve socioeconomic dilemmas; indeed, the late fragments on Einstein . . . suggest just the opposite: a lag between the social institutions and the innovations and discoveries of modern physics . . . . (116)

It is worth emphasising here that the 'lag' that Jameson mentions in that passage refers to the trailing of the advancements in physics by various social institutions and not vice versa.

Jameson's reading of *Einstein* is astute but Brecht's planned play regarding one of the key figures of the second scientific revolution is, in fact, even more specific about the potential entailment of a lag between the social and the scientific. One of the later fragments of the 'play' reads: "Advancement in the knowledge of nature / With a standstill in knowledge of society / Will be fatal" (985; my translation[7]). This bleak and almost aphoristic comment reflects a markedly different concern than the one that is the primary focus of *Galileo*. In Brecht's earlier play the threat, insofar as one existed, appeared as being one mostly directed by a conservative social and ideological institution against a radical new description of the cosmos; it was the resistance of a deeply ingrained paradigm against a challenge from a new one. The suggestion in *Einstein*, by contrast, is that progress in the physical sciences that proceeds unmatched by coterminous development in the social sciences will have dangerous consequences for the population as a whole. Such a notion of the destructive potential of progress, here, brings to mind Benjamin's iconic interpretation of Klee's *Angelus Novalis* as the angel of history: "This storm irresistibly propels him into the future to which his back is turned, while the pile of debris before him grows skyward. This storm is what we call progress." ('Theses on the Philosophy of History' 258). Science, and scientific understanding, continually advances but it does not do so in isolation and nor does it do so without broader consequences.

[7] "Fortschritt in der Erkenntnis der Natur /Bei Stillstand in der Erkenntnis der Gesellschaft / Wird tödlich."

To consider more fully this shift of focus within Brecht's thought an analysis of his depiction of Einstein, and his views on him in general, is useful. Whilst Einstein did play a part in the development of atomic weaponry he was not directly involved (he endorsed the Manhattan Project but was not part of it), and so in some respects his initial appearance within Brecht's notes is initially surprising in nature: "News of Hiroshima reached Princeton. The populace looked with fear upon the great Einstein, the champion of peace" (984; my translation[8]). This fear of the figure of a scientist, rather than perhaps a distrust, marks a development of sorts; it is, however, the contrast between Princeton and Hiroshima, between atomic devastation and the championing of peace, that Brecht is interested in and that makes Einstein the ideal focus for a play that is, essentially, the sequel to *Galileo*. The great remove between the images of the sheltered university town of Princeton and the levelled Japanese city of Hiroshima, as well as the notion of a pacifist whose work came to pave the way to the atomic age, illustrates well Brecht's argument about a disjunction between scientific research and knowledge of society.

Brecht's view on Einstein in this regard is mixed. There is no doubt Brecht held Einstein in high regard as a physicist and intellectual figure: he sought his opinion on an early version of *Galileo* (Parker 392) and somewhat inexplicably considered him as a referee for his move from Switzerland to Germany ('To Gottfried von Einem' 475). In the wake of Einstein's comments on how atomic capability should be handled in the aftermath of World War II, however, Brecht's description of one of the most influential thinkers of the century is as being "a brilliant brain in his own subject, housed in a bad violinist and eternal schoolboy with a penchant for

[8] "Kunde von Hiroshima erreicht Princeton. Die Bevölkerung sieht mit Furcht auf den großen Einstein, den Vorkämpfer des Friedens."

generalising about politics" (*Journals* 357). Out of context, this description appears similar to countless other 'eccentric scientist' depictions of Einstein that now pepper popular culture; Brecht, though, is not painting a caricature so much as he is attempting to critique Einstein's perceived naivety about matters other than physics. Whilst there is something slightly petty in the "bad violinist" and "eternal schoolboy" comments, Brecht's argument essentially aims to simply highlight the fact that the development of the atomic bomb brought society and theoretical science together in new and dramatic dialogue. Brecht does not, however, limit his critical attention to Einstein: he also writes that "it is dawning on the other scientists who are involved in the production of the atomic bomb (their remarks about the outside world are vague – one doesn't have to understand the world to destroy it) that their freedom of research may be restricted . . . " (*Journals* 357), but Einstein's established cultural status makes him an obvious choice to be the focus of a play.

Despite this, there is something somewhat puzzling about the degree of responsibility that Brecht places upon scientists whose research only indirectly enabled atomic energy to be harnessed and weaponised. Brecht is critical in his later writings of the development of scientific thought without a corresponding increase in our understanding of society; this is a view, however, as can also be seen through the revision of *Galileo,* that only took shape following the conclusion of the war. Before 1945, as has been shown, Brecht was enthused by the "world of the physicists" and the possibilities that it offered, and so was presumably as aware, or unaware, of what society might do with this knowledge as Einstein was. This vicissitude in Brecht's thought is, however, reflected in *Einstein* in a manner that is also interesting when viewed in relation to the final scenes of *Galileo*. Whilst Galileo, in the play, spends his last years working in isolation to ensure his theory's survival in the wake of his recantation, even though "there is no scientific work that

can only be written by one particular man" (107), *Einstein* casts a different light on the irreversibility of discovery:

> [Einstein] sees how the Nazis turned his writings over to the flames. He knows that only he, not his work, has something to fear from them. The great formula is not annullable.
>
> This is the beginning. At the end he knows that his triumph has itself changed into his defeat, but also that he cannot withdraw the great theory, when its deadliness has made itself manifest. (985; my translation[9])

In this fragment, Brecht, moving from a sense of reassurance in the fact that radical insight is not itself 'annullable' to a seeming regret about this same quality, is commenting as much on the difference between *Galileo* and *Einstein* as he is on the opinions of Einstein himself.

If the scientific age began for Brecht with Galileo, then, writing during the first half of the twentieth century, there is no doubt that he saw the creation of the atomic bomb as a significant moment. Despite the fact that the demonstration of the destruction that science was able to inflict upon society undoubtedly dismayed Brecht, it is, however, important to view this in conjunction with the intended aims of his theatre, which were more strongly grounded in the idea of using the epistemological problems of quantum mechanics as a means to assert a new kind of theatricality. Whilst the subject matter of plays such as *Galileo* or *Einstein* may tend towards bleakness as to the potential applications of science, Brecht's concern as a playwright and director was, as has been argued here, not to present his audience with a narrative to be viewed as fixed and to be empathised with passively but, rather, to provoke a change to the situation. Equally, the fact that the

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[9] "[Einstein] sieht, wie die Nazis seine Schriften den Flammen übergeben. Er weiß, daß nur er, nicht sein Werk, etwas von ihnen zu fürchten hat. Die große Formel kann nicht zurückgenommen warden.

Dies ist der Anfang. Am Ende weiß er, daß sein Triumph sich in seine Niederlage verwandelt hat, da auch er die große Formel nicht zurücknehmen kann, wenn ihre Tödlichkeit sich erwiesen hat."

vast majority of his plays did not take physics, or science more generally, as their focus also needs to be emphasised.

Regardless as to the technological applications that were being found for twentieth century physics, the primary significance for Brecht, in terms of his thinking about theatre more generally, was the reinvigoration of the theatrical metaphor within scientific understandings of the physical world picture. From this, and from what he took to be a strong precedent for rethinking the dynamics and possibilities of spectatorship, Brecht strove to establish a theatre wherein theatricality was conceived as having as legitimate a claim as science to being able to present and change the world in which we live. As such, by working in reference to the new ideas emerging about the way in which people are positioned in relation to the natural world, Brecht was able to create a theatre in which human and societal behaviour was figured neither as something absolute nor as determined by universal processes but, instead, as dependent upon the way in which it is perceived. That physicists can be politically naive or irresponsible, and that scientific progress can leave destruction in its wake, is certainly an issue for Brecht but, equally, as he understood it, and as plays such as *Galileo* or *Einstein* so powerfully emphasise, the function of his theatre ‘of the scientific age’ was to realise that this did not need to be the case.

Chapter Four

The Long Observation of the Play: Beckett's Theatre and the Crisis of Science

> DR PIOUK. And you, dear monsieur, is your role well delineated?
> M. KRAP. It's eliminated.
> DR PIOUK. But you're still on stage.
> M. KRAP. So it would seem. (Beckett, *Eleutheria* 33)

Beckett's first completed play is a work that makes the concept of theatricality critically evident throughout. Although discarded by Beckett during his lifetime and only published posthumously, *Eleutheria* is far from being unaccomplished and represents a valuable insight into the positioning of theatre within his thought as well as his ideas about the medium itself (McMillan and Fehsenfeld 29). Its title denoting the Greek idea of liberty, *Eleutheria* is concerned with the concept of freedom on numerous levels. Most immediately, it stages the struggle of a young man, Victor Krap, to gain independence from his family. On another level, as Paul Shields has argued, it demonstrates a desire on the part of Beckett to refuse assimilation into "the myths of Western culture" and the values of meaning they seek to prescribe (304). Most fundamentally, however, and underpinning both of those other notions, it is the question concerning the possibility of freedom from the stage, or the space of the theatre, that is the shaping force behind the play. M. Krap's persistent presence post-elimination, as shown in the introductory quote, stands as just one clear early indicator of that which Beckett saw to be simultaneously one of the main problems and the main values of theatre: the manifest inability to eradicate fully from human experience the corporeal aspect of human existence.

Whilst it would be impossible, and misguided, to seek to ascribe to Beckett an overriding preoccupation with any one particular question it is, nevertheless, possible to trace throughout his oeuvre a consistent critical interest in the means by which people seek to make sense of the world and position themselves within it. Accompanying this is an equally consistent challenging of the human body that is evident from his early novels, such as *Murphy*, but that becomes increasingly striking from the point at which he begins to write for the theatre. Dr Piouk's observation that M. Krap is "still on stage" could well be taken as an epitaph of sorts for the whole of Beckett's theatrical output, albeit a complex one. What begins with *Eleutheria*, and is both continued and developed through almost all of his subsequent writing for theatre, is an attempt by Beckett to engage critically with the impossibility of thinking and being outside of the parameters determined by an embodied, theatrical, existence. The increasingly severe strictures that Beckett imposes upon the performing body in order to reduce its presence are an integral part of his aesthetic but they also need to be considered as being part of a sustained reflection upon the *theatrum mundi* metaphor. It is not simply what happens and what is present on the stage that Beckett is concerned with; it is, more importantly, what occurs within the entirety of the theatre, the audience included.

What this chapter undertakes to argue is that for Beckett theatricality in its deepest sense forms a fundamental basis for human understanding of the world, and that there can be no true freedom from this. This is not, however, a necessarily negative view of theatre; rather, it represents the culmination of a long critique of the epistemological claims of scientific and Enlightenment reason. For Beckett, it is to be argued, the idea of a description of nature ultimately devoid of anthropomorphic elements represented an unattainable goal. Drawing upon a long

interest in the development of Western philosophy as well as, crucially, modern science (Steven Connor, *Beckett, Modernism and the Material Imagination* 126), Beckett developed a form of theatricality that asserted itself as an autonomous mode of thought and that also, in effect, bridged the gap between science and philosophy. It is toward an exploration of the manner in which this conceptualisation of theatricality emerged and developed that this chapter now turns.

1.0 "The unseen vicissitudes of matter"

During the early years of his career as a writer, and particularly so during the 1930s, Beckett formed a habit of 'note-snatching': copying down ideas and phrases from a wide range of texts with the intention of including them in his own work (Mark Nixon, *German Diaries* 104). Whilst this practice was largely abandoned just prior to the outbreak of World War II, the notebooks themselves remain of great use in gaining an insight into Beckett's interests during that period of particularly intense intellectual curiosity. Boldly scrawled and underlined on one of the otherwise typically blank verso pages of Beckett's so-called '*Whoroscope* notebook' the phrase "The unseen vicissitudes of matter" (MS 3000) commands a certain attention. Although it lacks explicit contextualisation within the notebook it is most probable that its is in reference to Richard Burton's *The Anatomy of Melancholy*, from which passages have been copied on the subsequent recto page, and indeed the phrase appears to have been interpolated into *Murphy* on one level as "the vicissitudes of the body" (70). When considered in relation to the notebook as a whole, however, as well as to the broader context of Beckett's work and though, those five words also assume a more general significance.

On the one hand, positioned within a notebook that also contains passages from works by Henri Poincaré and J. Willard Gibbs concerning laws of dynamics,

Brownian motion, statistical thermodynamics, and the notion of scientific methodologies, the words “unseen vicissitudes of matter” could be taken as a fairly apposite description of one of the dominant issues within twentieth century physics. On the other hand, equally, the word “unseen” is also one that has a particular significance within the context of Beckett’s work: the issues of sight and observation are crucial within modern science, as has been shown in previous chapters, but they also form a central aspect of Beckett’s own aesthetic, both literary and theatrical. Beckett had, Steven Connors argues in his reading of the drafts of the unfinished work ‘Long Observation’, a “preoccupation with the dynamics of looking” that became first apparent with *Play* (‘Between Theatre and Theory’ 79). Connors is not alone in this opinion: Anna McMullan also argues that much of Beckett’s theatre can be seen as being in some respects an investigation into what she refers to as the “mechanics of vision” as well as the “shifting perspectives and paradoxes of spectatorship” (133). Both of these contentions are astute and, in addition to highlighting an important similarity to both Brecht and Stein, become particularly interesting when considering the tendency towards an ever increasing aesthetic minimalism in both Beckett’s prose and his dramatic works. Although Beckett admired Joyce’s writing, seeing it as “epic, heroic”, he also realised, early on, that he “couldn’t go down that same road” (qtd in Knowlson, *Damned to Fame* 111). As Beckett saw it, and as he related to Axel Kaun in his so-called ‘German Letter’ of 1937, Joyce had taken as his concern the “matter of an apotheosis of the word” (‘To Axel Kaun’ 519) whereas he felt that his own approach was to aspire to a more desirable “literature of the non-word[10]” (520), a literature that would critique rather than expand the potential scope of language.

[10] Translated by Esslin in *Disjecta* as “unword” (173)

This abandonment of his early Joyceanism and his pursuit of "that which lurks behind" language ('To Axel Kaun' 519) is strikingly evident in the difference between his first and his last published works, both poems: 'Whoroscope', written in 1930 and containing an overabundance of erudite allusions, and 'What Is the Word', written in 1989 and much more severe in its attitude towards knowledge. Whilst compellingly argued by Laura Salisbury to on one level be an exploration by Beckett of the aphasia he suffered following a possible stroke in July 1988 (78), 'What Is the Word' also, however, represents a fitting close to Beckett's long engagement with linguistic representation. Dominated by elision and repetition, the poem is a haunting expression of the inadequacy of linguistic expression and of the problems of a need for sight. Throughout the piece these ideas are coupled with the notion of folly, with one section reading:

> folly given all this –
> seeing –
> folly seeing all this –
> this –
> what is the word –
> this this –
> this this here –
> all this this here –
> folly given all this –
> seeing –
> (lines 9-18)

To ask, here, as to what exactly the folly might be is to get to the heart of both the poem and Beckett's approach to writing and drama: is it foolish, "given all this –" and "seeing all this –", to ultimately recourse to language, to ask for "the word"? To a degree, Beckett's final poem certainly exemplifies such a position: the last line is separated from the rest and is a repetition of the title: "what is the word", at the close, stands alone as a question that seems to have no answer. 'What Is the Word', then, can be seen to highlight to a certain extent the key tensions that run

through much of Beckett's writing: seeing as opposed to not seeing; knowing as opposed to not knowing; absence as opposed to presence.

In 'What Is the Word', in an elegantly self-aware engagement with 'folly', Beckett attempts to synthesise all of those oppositions. The pervasive instances of elision, carefully considered through the process of drafting the poem (Salisbury 81), mark not a *removal* of substance from the text but, rather, an attempt at the *inclusion* of the otherwise ineffable. In this manner, the poem's questioning and critique of the power of the word and the drive toward linguistic expression is as much dependent upon the non-verbal void of the elision as it is upon the words that introduce it. Similarly, the issue of sight that Beckett repeatedly returns to throughout the poem, the "folly for to need to seem to glimpse", is fittingly defined as much by the idea and the presence of that which is unseen as it is by that which is visible. Each line of 'What Is the Word' balances an attempt at linguistic expression with the enigmatic dash of an elision that could represent anything or nothing. Cynical, or despairing, of the capability of language though the poem might appear to be, Beckett, crucially, also includes the problem itself within the work: the evident search for 'the word' and the unseen vicissitudes of the matter are inextricably connected.

Whilst this idea finds both neat and poignant expression in 'What Is the Word', it is in Beckett's writing for theatre that this conceptual problem is explored most fully. A theme in his dramatic writing from the start, the accordance of significance to that which is not physically or visibly present on stage becomes an increasingly important aspect of Beckett's theatre. For Shimon Levy, this is to be understood as a constitutive element of a pointedly self-referential aesthetic within Beckett's dramatic works; in questioning central tenets of theatre Beckett, Levy suggests, engages with the idea of "the 'non-being' offstage" (49). Conceiving of offstage as

being “both a technique and a ‘content’, a medium and a message alike”, Beckett’s manipulation of it as a theatrical device can be seen as one means by which he approaches the problem of the ‘unpresentable’ (Levy 48-49). There is value to such a contention but, equally, this line of enquiry can also be expanded so as to position Beckett’s theatre more critically within his broader project.

The relationship between Beckett’s theatrical and literary works is a close one, to the extent that some critics such as Jean-Michel Rabaté have argued that he blurs the distinction between genres (108), but it also one that has been complicated to a degree by what he himself claimed about it. Theatre, Beckett notoriously commented in 1967, was in the first instance a relief from working on novels because it dealt with people contained within a certain space (qtd in Michael Haerdter 88)[11]. Despite this apparent inference that writing for the stage was taken to be in some way less demanding, Beckett’s claim is better viewed not as being a mild slight but, instead, as indicative of what Connor has referred to as “a longing for an art of visibility and tangibility” (*Samuel Beckett* 129). Certainly, in consideration of a comment made to Georges Duthuit in 1951, Beckett can be seen to have been interested in the potential of theatre as a medium in its own right, and has distinct opinions on the subject: he is critical of what he perceives to be attempts by some to transform stage performances into a branch of painting; he claims to want a theatre “reduced to its own means, speech and acting”; and he posits that “theatre is a spectacle; but not of a place” (‘To Georges Duthuit, 3 Jan. 1951’ 218-219). The idea of performance and of the importance of theatricality was, then, foregrounded within Beckett’s thinking about theatre almost from the start of his career as a playwright: he was not seeking to make the stage literary but,

[11] “Theater ist für mich zunächst eine Erholung von der Arbeit am Roman. Man hat es mit einem bestimmten Raum zu tun und mit Menschen in diesem Raum”

instead, to embrace its own fundamental qualities. At the same time, however, those early statements might best be understood as establishing less a working definition as to what theatre was and more a number of provocations for exploring what theatre could become.

A particular turning point for Beckett's engagement with the stage and with theatrical praxis in those terms came when he began, in the 1960s, to direct his own plays and to think in a more involved manner about their realisation in performance (Knowlson, 'Beckett as Director' 453). Indeed, Beckett's progression from being a playwright who also advised on productions to his being a director in his own right had profound implications upon the way in which he conceived of his aesthetic. To that end, Gontarski has argued that Beckett's assumption of the directorial role was "one of the defining moments of late Modernist theatre" ('Revising Himself' 131); moreover, in increasingly prioritising the theatrical event, the materiality of a performance, over the playtext, Beckett's plays saw within them "the end of *literature* – but the beginning of *theatre*" ('Staging Himself' 88). Gontarski's claim is bold but astute: as Beckett's aesthetic developed, stage directions became progressively more central to the texts of his plays, to the extent that they often occupy more space on the page than the dialogue, and the final status of those directions increasingly determined by insights drawn from rehearsals and performances. In his writing for the theatre Beckett found himself, to ever greater extents, also writing from the theatre.

In so turning to theatre, Beckett also gained a powerful new means through which to think not only about the problems of language but also those of the human body. In the same letter to Duthuit in which he expressed his early thoughts on theatre, Beckett additionally claims that there has always been a tendency for people to have "written against the weakness of the word and inveighed against

that of the body" ('To Georges Duthuit, 1951' 219). The possible weaknesses of the word and the shortcomings of logocentrism were also an abiding preoccupation of Beckett, as 'What Is the Word' highlights, but this was very much matched in his work by an interest in the issues and fallibilities of the human body. As an important theme, the degradation of characters on a corporeal level can be traced back at least as far as the 'three novels': Molloy is decrepit and lame; Malone is bedridden; the voice in *The Unnameable* speaks without reference to a body. These prose works provide rich explorations of a range of ideas but, crucially, theatre provides something that the novel does not: writing for the stage, Beckett gained the actual embodied presence of the actor(s).

In a brief survey of a creative output of plays in which there is an evident and consistent restriction and reduction of bodies present on stage, it might be tempting to say that Beckett, like the unnamed others that he refers to, is also writing against the weakness of both the word and the body. In reality, however, the case is more complicated. Just as 'What Is the Word' both acknowledges and incorporates that which lies beyond the scope of language without fully succumbing to it, so too do Beckett's bodies persist. Made blind, partially buried, trapped in an urn, reduced to a mouth, intimated only by a drawn out breath: the body is greatly challenged in Beckett's theatre but, in its resistance to negation, it is hard to argue that it is ultimately presented as being weak. Indeed, the various weaknesses of the material body are frequently brought most effectively into focus by an equal emphasis upon its endurance, on the inability to fully remove it from the stage. For this reason, Blau argues Beckett's plays to be "trapped" in the body and holds them in contrast to the "utopian desire to do without it [the body] entirely" that he identifies in certain vanguards of postmodern performance ('The Surpassing Body' 93-94).

The significance of what the theatre offered Beckett in this regard, and what he brought to theatricality, becomes more readily apparent, it is to be contended in this chapter, when it is considered in relation to his thought and writing as a whole, and to its reception by philosophers and theorists such as Adorno, Badiou, or Delueze. The relevance of Beckett's engagement with various scientific issues to this chapter is to be found in connection to the strong philosophical questions that both permeate and surround his work. Just as Brecht found in quantum mechanics a useful new means to theorise the mechanics and politics of his Epic theatre, the epistemological crises of twentieth-century physics corresponded well with Beckett's own "deep distrust of the rational process" (Chris Ackerley, 'Beckett and Science' 144). This scepticism toward rationalist methodologies is most frequently identified in *Watt*: the eponymous character's prolonged and pronounced difficulties in understanding the situations within which he finds himself, and his inability to even properly apprehend Mr Knott, generally being taken to be a comic attack on the limits of reason (Andrew Gibson, *Beckett and Badiou* 32). Similarly, Murphy's attempt to move between the 'big world' and the 'little world' is commonly highlighted as evidencing a critical interest in the relation between the mind and the body that is rooted in Cartesian philosophy (Katherine Ebury 145). Such readings of Beckett's work are insightful but, for the most part, they fail to expand the argument to take into consideration the complex thinking he develops on and through theatricality.

An attempt to outline more exactly the manner in which these concerns shaped Beckett's work is frustrated to a certain extent by the fact that, whilst a prolific letter-writer, he wrote very little on the subject of his own aesthetic practice or ideas. There is no Beckettian equivalent to Stein's 'Plays', or Brecht's 'Short Organum', in which he works to clearly or at length formulate his ideas concerning theatre, or

theatricality, and the aims that he has for it. Accordingly, an understanding of his re-conceptualization of theatre must instead largely be drawn from brief comments in correspondences and notebooks, and from critical analyses of texts such as 'Long Observation', and of his plays themselves. There is, however, an account of a conversation with Beckett given by Haerdter that provides an important foundation for the argument to come. Haerdter, in a rehearsal diary that he kept during the 1967 production of *Endspiel*, describes having asked Beckett for insight into one aspect of the play. Beckett, Haerdter notes, had initially refused to discuss the point with him but then returned a few days later and started to speak about his work and the value of writing and theatre. In the account given, Beckett speaks first of "pure force of imagination" as being key to novels, a force that attempts to effect an escape from the chaotic tangle of "things" (230). "There are so many things", Haerdter recalls Beckett saying, "[and] the eye is as incapable of comprehending them as the mind is of grasping them . . . " (230). Again, here, the notion of sight and comprehension makes another important appearance but it is the account that Beckett proceeds to give as to the "value of theatre" that is perhaps of most significance. This part of the recounted conversation is worth quoting in full:

> 'The crisis started with the end of the seventeenth century, after Galileo. The eighteenth century has been called the century of reason, *le siècle de la raison*. I've never understood that: they're all mad, *ils sont tous fous, ils derainsonnent*! They give reason a responsibility which it simply can't bear, it's too weak.' . . . 'Now it's no longer possible to know everything, the tie between the self and things no longer exists... one must make a world of one's own in order to satisfy one's need to know, to understand, one's need for order'. Beckett's speech is now quite easy, his emotional involvement has given way to almost cheerful consideration. 'There, for me, lies the value of the theatre. One turns out a small world with its own laws, conducts the action as if upon a chessboard... Yes, even the game of chess is still too complex.' (qtd in McMillan and Fehsenfeld 231)

From Galileo to the value of theatre: there is, here, an obvious parallel to the work of Brecht. Both writers taking the emergence of modern empirical science as being a, if not necessarily *the*, critical reference point for understanding their aesthetic.

There are, however, clear differences between how this is figured within the thought of both Beckett and Brecht.

As was argued at length in the previous chapter, Brecht's interest in quantum mechanics hinged to a significant degree upon perceived notions of determinism and the possibility of change. For Beckett, as can be begun to be seen in the quotation above, the issue is not quite the same; instead, the problem for him is the impossibility of knowing that emerges from readings of the same intellectual tradition. In speaking of reason having been ascribed a responsibility that is too great for it to bear, Beckett gives voice to a certain scepticism as to the validity of the ideas underpinning Enlightenment thinking. In particular, it seems that because there is no allowance for not-knowing to be a form of knowing, there is a "crisis". This much is relatively clear, but will be returned to in greater depth later in the chapter. Less immediately evident, however, is exactly how the theatre is being understood in this regard and precisely what its "value" is for Beckett.

Ostensibly, Beckett is telling Haerdter that theatre allows him to escape from chaotic complexity into a "simpler world"; a pointedly "small" world and also one in which the laws that govern it are, to some degree, more readily defined. There are, however, numerous difficulties to be found with this statement, not least the fact that it demands an acceptance of Beckett's theatre as being simple. Certainly, Beckett developed an increasingly minimalist aesthetic but, despite the reduction of stage presence, his theatre retains, and often advances, a great degree of complexity in its demands both upon the actor and the audience (Ruby Cohn, *Back to Beckett* 218). In this experimental isolation of the small world there is less chaos, perhaps, but there is more uncertainty; a defining feature of Beckett's theatre, though, is the role that this uncertainty assumes.

If this has proved an especially prologue to analysis then this also speaks to the enduring complexities and difficulties of Beckett's work (as well as to the sheer volume and range of scholarship that it has precipitated to date). The intention so far has been to highlight a number of key interests and problems within Beckett's thought and his aesthetic praxes, and to provide a brief initial outline of the importance that form, and particularly theatricality, has within such a consideration. Accordingly, the argument that will be developed throughout the rest of the chapter will work to examine these issues in greater critical depth. The first step in doing so will be to briefly survey the way in which Beckett has been received by twentieth-century philosophers and to consider what his theatre has been seen to offer. In doing so, the intention is not to enter too deeply into the already incredibly extensive critical debate concerning Beckett's own engagements with philosophy but, rather, to focus on one of the end results of that, and to approach that in turn as posing a question in its own right. Acknowledging that Beckett's theatre has had a significant influence upon the work of thinkers such as Adorno and Badiou, one of the underlying issues that this chapter seeks to examine is that of why this has proved to have been the case. Whilst not denying the importance of philosophy in that regard, it is to be argued that there is another important common factor that has been largely ignored: a questioning of the claims and influences of modern science.

In order to then establish the ways in which science had a role in the development of Beckett's aesthetic, this chapter will more pointedly examine the evidence that exists of his awareness of, and engagement with, issues central to physics, particularly that of the twentieth century. As a result of the fact that despite more recent developments the existing critical literature on Beckett's relationship to science is still comparatively limited (Duffy 43), the approach taken here will be, in

the first instance, to outline the extent of his documented awareness of in that regard, primarily by surveying his letters and notebooks. Having done that, the chapter will then move to consider the ways in which Beckett's thinking about physics can be seen to have informed aspects of his theatre; in doing so, the argument aims to again expand upon existing studies that often tend, then thinking about science, to focus on his prose works, and particularly his early novels. As such, in working towards that end, after having outlined the general manner in which Beckett can be seen to have approached the issue of modern science this chapter will examine the late manuscript text 'Long Observation' as a work that both challenges genres and that also in many ways provides a key to understanding how theatricality, science, and philosophy triangulate within his thought and work. To further explore the ideas that emerge from that the argument will then analyse in more detail the manner in which the problems of space, spectatorship, and material presence assume critical role within the form of theatre that Beckett developed, and the challenge to the concept of representation that that posed.

2.0 The Philosophers' muse

Beckett first developed an interest in philosophy whilst at the École Normale Supérieure (Anthony Cordingley 49) and its potential influence upon his work has been one of the questions most consistently addressed in critical studies. Frequently central to such discussion is the philosophy of Descartes and its dualist approach to the question of the relationship between body and mind; more recently, however, critics have increasingly begun to argue that Descartes has been accorded too much significance, and that his "shadow has been cast across Beckett Studies far too emphatically and for far too long" (2). This is a welcome

move and allows for a more open consideration of some of Beckett's most abiding intellectual concerns: whilst in some cases this has simply led to a greater focus being placed on other individual philosophers, such as the Occasionalist Arnold Geulincx, in whom David Tucker claims Beckett "recognized a kindred figure" (7), it has also helped to prompt more analyses of his stance on Western philosophy in general. Indeed, whilst Beckett's own investigations into the work of thinkers ranging from the pre-Socratics to Bergson are undoubtedly of interest, it is the manner in which his work has in turn been incorporated by philosophers into the philosophical tradition that is of more particular significance here.

It is the question of form, rather than content, that needs to be prioritised when considering the manner in which Beckett's work has been received philosophically. Traces and explicit references to Beckett's reading abound throughout his earlier writing but acknowledging these allusions, such as the appearance of Democritus as a "little wearish old man" ('Enueg I'; line 30) or of the nod to the "beautiful Belgo-Latin" of Geulincx in *Murphy* (112), is only the first step towards understanding his more complex response to philosophy. Indeed, as Anthony Uhlmann has argued, the issue at stake is as to what Beckett's work should be viewed to be (87). For Uhlmann the situation is defined on one level by the idea of a tension between two disciplines:

> Beckett's writings are not disciplinary philosophy . . . but in finding themselves concerned with problems which are also encountered by philosophy they draw our attention to the very problem of the nature of the possible relation between philosophy and literature, between the world of feeling and the world of abstract understanding. (87)

Uhlmann's claim is both insightful and also slightly problematic. On the one hand, the emphasis placed upon the notion of Beckett not having produced disciplinary philosophy is astute, as is the idea that what Beckett's work does do is pose questions about interdisciplinary relationships. On the other hand, however, Uhlmann appears to both invite a consideration of theatre and theatricality whilst

pointedly ignoring it in this context: he focuses upon “Beckett’s writings” and “literature” whilst, if anything, the relation between “the world of feeling and the world of abstract understanding” is one that is most powerfully explored in the theatre. It is, certainly, the complex dialogue between Beckett’s work for the stage and the writings of twentieth-century philosophers that has more recently been brought to the fore in studies of theatre and performance.

Reiterating, to an extent, Uhlmann’s notion that Beckett’s writing critically highlights what is essentially a distinction between literature and philosophy, Puchner has contended that, in his stage plays, “Beckett is minding the gap between theatre and philosophy, or even reinforcing it” (‘Afterword’ 550). For Puchner, being mindful of the difference between theatre and philosophy, of the long history of their troubled relationship, is an integral part of any approach to the two in conjunction (552); accordingly, as he sees it, Beckett’s theatre has “attracted the most and also the highest level of philosophical commentary” precisely because it enforced the apparent gap between theatrical and philosophical practice (549-550). In a similar vein, Daniel Koczy argues that Beckett’s theatre has been seen by philosophers to be so significant because it “insists on its alterity” (6): it is actively concerned with the same fundamental problems but in its engagement with those it also refuses to be held as philosophy, per se. What Beckett’s plays offer is a challenge to received notions of representation and meaning that have, as Chapter One showed, been central to Western culture since Plato; noting the manner in which Beckett re-conceptualises theatre in relation to that tradition, philosophers have found need to reflect upon certain claims of their own discipline.

Most notable of those figures who have turned to Beckett’s theatre in their philosophising are Adorno and Badiou, two thinkers otherwise quite distinct from one another. For both Adorno and Badiou, however, as Rabaté has observed,

Beckett's work posed a "major theoretical problem that had to be addressed and responded to with new concepts" (98). Theatre, rather than being something that philosophy must seek to escape in order to advance, became something that invited reflection and was conducive, perhaps even necessary, to the development of thought. It cannot be denied that the responses to Beckett's work in that regard have complications of their own, and indeed Adorno and Badiou might each be found to have "created a Beckett in his own image" (Puchner, 'Afterword' 551), but, regardless of those difficulties, what makes the dialogue significant is that it holds that art, that *theatricality*, presents ideas pertinent to philosophical reflection.

As one of Beckett's earliest champions, the key issue for Adorno was the way in which meaning, as a positive value, was challenged: Beckett's plays were perceived by Adorno to be valuable, and indeed exemplary of modern art, not because they display an "absence of any meaning . . . but because they put meaning on trial; they unfold its history" (*Aesthetic Theory* 201). Beckett does not attempt to simply avoid meaning but, rather, to critique its foundations and, consequently, when Adorno reads *Endgame* he finds in its dramatic situation the "negative of meaningful reality" ('Trying to Understand *Endgame*' 130). Since at least as early as his collaborative work with Max Horkheimer, the consequences and legacies of Enlightenment thinking within Western culture were foundational to much of Adorno's philosophy and it is these that he positions Beckett against. Whilst *Dialectic of Enlightenment* opens by introducing the concept of enlightenment in its most general sense, as being "the advance of thought" (1), it is more particularly the Enlightenment mode of thought that was both ushered in and defined by the emergence of modern science that is taken as being paradigmatic by Adorno and Horkheimer. They view the Enlightenment in terms that are in many was quite similar to Heidegger's account of the realisation of the world picture: as a

drive to eradicate myth and to master nature by rendering as object defined by mathematical laws (1-18). As such, the so-called “meaningful reality” that Adorno holds *Endgame* to so effectively challenge, and the meaning that Beckett’s plays more generally put “on trial”, can therefore be seen to be, on at least one level, those that are central to modern science. As Adorno posits art to stand in “critical tension” to science within culture (*Aesthetic Theory* 303), Beckett’s theatre, in its antagonism to the scientific episteme, offers him a valuable means by which to further his critique of modernity. Philosophical contemplation of Beckett’s theatre, he argues in his essay on *Endgame*, can result in an understanding only of its “incomprehensibility” (120), of its refusal to be rationalised; for Adorno, therefore, Beckett’s oeuvre assumes a role of a negative aesthetic that enables, in turn, a negative dialectic.

In contrast to that focus on Beckett as having developed an aesthetic of negation, Badiou embraces Beckett’s theatre as being one that is fundamentally affirmative in its nature (Rabaté 105). Reacting against what he perceived to be the prevailing view during the 1950s and 1960s of Beckett’s work as being a “gloomy corporeal immersion into an abandoned existence, into hopeless relinquishment”, Badiou proposes instead that it should be seen taken as a “lesson in measure, exactitude, and courage” (‘Tireless Desire’ 40). For Badiou, Beckett presents a way of thinking that is an alternative to “the torture of meaning . . . the vain and interminable agreement between what there is, on the one hand, and ordinary language, on the other” (59), a relationship that he hold to be “the tiresome torture of all empiricist philosophies” (59). Although he engages with the entire range of Beckett’s writing, it is the theatre that becomes of paramount importance to Badiou and, increasingly, he turns to it as embodying one form of his concept of the ‘event’ (Puchner, ‘Afterword’ 551), something that can extend beyond the otherwise

established parameters of the situation. Emphatically countering Plato's criticism, Badiou contends that the singularity of a theatrical event "operates in the realm of *truth*" and that as such "[p]hilosophy can learn from it so as to grasp what is a precarious, experimental, ephemeral, rupture within the regime of opinion" ('Theatre and Philosophy' 106). The "unquestionable masterpieces" of Beckett's "huge" theatre ('Rhapsody for the Theatre' 49-50) have a significant presence throughout Badiou's thinking in that regard; their theatricality taken to affirm the possibility of perceiving that which cannot be circumscribed by systems of thought that strive for completeness.

In both cases, what Beckett's theatre is taken to offer philosophy is a way of thinking about epistemology and ontology within modernity, as a period shaped and determined by modern science. To a significant extent this engagement is also often closely entwined with politics, albeit in different ways. For Adorno, as Rabaté notes, Beckett's work would always have a political impact precisely because it refuses to explicitly engage with politics (104); for Badiou, the theatricality of Beckett's plays, as performance events, becomes one of the foundations for his concept of theatre as the "reknotting of politics" ('Rhapsody for the Theatre' 13) wherein the old analogy between politics and theatre is re-conceptualised. Absent from most philosophical contemplations of Beckett's theatre, however, those of Adorno and Badiou included, is a consideration of how he himself approached the question of the physical sciences and what he drew from it in developing his aesthetic. As such, what is now to be argued is that one of the reasons that Beckett has proved so important to many twentieth-century philosophers is because his theatre is one that questions the claims not only of philosophy but also of modern science, and because he does so on the stage he exposes the conflicted relationships that have existed between ways of knowing in Western culture since

Plato. In order to examine the ways in which Beckett achieved this, this chapter will now move to focus upon establishing the presence of modern science, particularly physics, within his thought, and the ways in which this correlates with and informed his conception of theatre.

3.0 "The physicists didn't help me"?: Beckett's encounters with science

By all accounts Beckett, insofar as his formal education is concerned, possessed no real aptitude for science (Anthony Cronin 45). Aptitude is not, however, a prerequisite for interest. If Beckett displayed no particularly noteworthy scientific proficiency he did, by contrast, evince a certain interest in the field and its development, current and historical. Part of this may have been correlative to his study of philosophy; another part of it may have been the result of the popularisation and wide-spread public interest in the new discoveries and advances that were taking place in the physics of his day. Certainly, as Ebury notes, when Beckett was living in Paris during the late 1920s relativity theory and the newly emergent quantum mechanics were fashionable topics (131). In this regard, due once again in part to Beckett's reluctance to provide comment on his work and his influences there is a certain degree of conjecture involved but, equally, there does exist enough evidence to lead John Pilling to claim that he had "a long-standing interest in the discoveries of modern science" (223). Montgomery, likewise, suggests that it is "fair to say that in the 1930s Beckett was *au fait* with (and took an interest in) development in physics at least up to Einstein if not beyond" (174).

Much of the most readily available evidence to support such claims is found in the *Dream* and *Whoroscope* notebooks. In the former, Beckett took notes from *The Universe Around Us*, a 1929 book by the British physicist James Jeans that was

one of the many works of popular science being published at the time with the aim, as he states in his preface to the first edition, of explaining the current physical understanding of the universe in a manner "intelligible to readers with no special scientific knowledge" ('Preface'). In the book, Jeans covers the basic principles of astrophysics as well as the structure of the atom, the theory of relativity, and the emergence of quantum theory. As with *The Mysterious Universe* published the following year, and which deals more explicitly with the epistemological impact of quantum mechanics, Jeans' writing works to establish the early twentieth century as having been a time of significant change in terms of the scientific understanding of nature and its observation. There is nothing to directly indicate that Beckett read more than one book by Jeans but the later '*Whoroscope* notebook' demonstrates that his reading of similar books continued throughout the 1930s.

As has been briefly alluded to earlier, the '*Whoroscope* notebook' draws upon a wide range of texts concerning subjects that range from geological eras to Humean metaphysics. Focusing at this point specifically on Beckett's reading into physics there are two sections of the notebook that are of particular relevance. The first consists of a series of passages copied from midway through experimental physicist George Minchin's *The Student's Dynamics*, a textbook that largely comprises of technical expositions of the principles of dynamics. Beckett took notes from the lesson concerning the collision of two spheres, copying almost verbatim Minchin's explanation of the coefficient of restitution, *e*, relating the velocity of separation to the velocity of approach (Beckett MS 3000; Minchin 139-140). This unusually specific reading is subsequent, however, to a series of more useful passages earlier in the notebook that are taken by Beckett from Poincaré's *The Value of Science*, in French. Once again, Beckett appears to display an interest in the mechanics of action and he has included sections that he labels as showing

"Newton's principle of equal action + reaction jeopardised by behaviour of electrons" (MS 3000). He also, however, includes notes that reference Einstein's theories of Relativity, "the demon of Maxwell", Brownian motion, and Gibbs' *Principles of Statistical Mechanics* (MS 3000). Beckett's citations, here, are taken from one of the latter sections of *The Value of Science* entitled 'The Present Crisis of Mathematical Physics', which Poincaré opens by presenting a significant question: the "principles on which we have built all, are they about to crumble away in their turn?" (296). It is in this respect that Poincaré acts as perhaps a more useful indicator than Minchin as to how Beckett was approaching, or reading into, physics.

Writing as a thinker who made significant contributions to not just theoretical physics but also to maths and the philosophy of science, Poincaré, in *The Value of Science* sets out, primarily, to consider the role that science has in aiding human understanding of the universe, in conjunction with the basis upon which it grounds its claims. The value that Poincaré refers to in the title concerns that which he calls the idea of the "objective value of science" (345): Poincaré's interest in this instance lies in addressing the extent to which science is able to establish an objective reality in which all things can be seen to exist in a relation of universal harmony (350). Whilst these relations and harmony, Poincaré acknowledges, "could not be conceived outside of a mind that conceives them . . . they are nevertheless objective because they are . . . common to all thinking beings" (350). This intellectual position, echoing to an extent Planck's notion of the united world picture, is expounded by Poincaré not just throughout *The Value of Science* but also in two of his other major expository works with which it is often published: *Science and Hypothesis* and *Science and Method*. Given Beckett's proclaimed distrust of rationalist approaches, Poincaré's positioning of physics clearly within

the broader context of epistemological debate would have provided a useful framing of events in contemporary physics within a field more familiar to Beckett.

It is also by means of Poincaré that the question as to Beckett's awareness of quantum mechanics can start to be addressed. In the otherwise excellent and compendious *Grove Companion to Samuel Beckett*, Ackerley and Gontarski write in their entry on Poincaré:

> His [Poincaré's] discussion of Newtonian gravitation shows that its laws do not apply to the movement of electrons. SB notes the minute size of particles, laws of thermodynamics, conservation of energy, mass and inertia, action and reaction, relativity, Brownian motion, Maxwell's theories of light and electromagnetism, his Demon, Heisenberg's Uncertainty Principle, the speed of light, and the impossibility of attaining absolute zero. Poincaré's point is the subversion of classical physics at the subatomic level. (447)

This entry is made curious by its inclusion of Heisenberg and his work. Whilst the *Dream* and *Whoroscope* notebooks show clearly that Beckett had, indeed, some degree of understanding about the situation in physics up until general relativity they also, however, make no real reference to then more recently developed quantum mechanics. Indeed, given that *The Value of Science* was published in 1905, and that Poincaré died in 1912, not only is there no reference to the Uncertainty Principle anywhere in his book but it would also have been impossible for that to have been the case: Heisenberg not arriving at his idea until 1927. Whatever the reasons behind such a claim, the Poincaré entry in the *Grove Companion* does serve to illustrate some of the difficulties present in scholarly approaches to Beckett and twentieth-century physics past the point at which he was note-snatching. Interestingly in this regard, Montgomery, in her article examining parallels between *Watt* and the epistemology of quantum mechanics, also claims that the amount that Beckett knew about quantum theory is a "matter of conjecture" (174). Whilst the matter might well be closer to conjecture than to certainty found in notes taken from *The Value of Science* neither position is entirely

accurate; it is, in fact, possible to find a number of instances in which Beckett is known to have read material concerning quantum mechanics.

The first of those cases came at a point shortly following the conclusion of World War II. In June 1946 Beckett presented his uncle Gerald with a copy of Schrödinger's book *What is Life?*, a work in which the physicist applies quantum mechanical principles to elements of biology (Knowlson, *Samuel Beckett: An Exhibition* 52). There are no notes available to show exactly what Beckett had found sufficiently interesting to prompt him to also give his uncle a copy, but Gordon Armstrong claims that Beckett affirmed, in conversation, the importance of Schrödinger's publication to his own work (215). In this Beckett was not alone as a literary figure with an interest in science: *What is Life?* became, as Peter Middleton notes, one of the books written during that period that "gave poets their most authoritative idea of the potential interrelations of science and poetry" (66).

The second instance at which it is clear that Beckett encountered material pertaining to the implications of quantum mechanics upon the scientific understanding nature came slightly later than his reading of *What is Life?* and drew what is arguably a less enthusiastic assessment from him. Writing to his long-time friend Barbara Bray in August 1960, Beckett thanks her for having sent him copies of *The Listener*, the BBC's weekly publication of the content of radio shows such as the Third Programme. It is not evident in the letters that have been published as to exactly why Bray had sent issues of *The Listener* to Beckett but, in addition to his expressing thanks for her doing so, he also comments that "The physicists didn't help me – most of it I couldn't follow" ('To Barbara Bray' 348). The physicists in question were for the most part members of the Royal Society whose tercentenary was being celebrated by *The Listener* with a series entitled 'The Prospects of Science', and two of these published talks concerned the situation in quantum

physics. Denys Wilkinson discussed “a problem at the heart of physics today” in ‘Matter and Sub-Matter’ (94) whilst Alfred Pippard in ‘The Quantum World’ worked to set out the inadequacies of classical physics when it comes to the description of particles such as electrons (92+). Beckett’s claim to have been unable to follow most of what was said in these pieces might best be understood though, like many of his professions of ignorance, to pertain not so much the general issues at hand but more to the specifics: both articles do proceed to move relatively swiftly from an outline of the broader picture to the details of each physicist’s own current research. If the exact nature of Beckett’s interest in physics in this instance does remain at the current moment a matter for scholarly conjecture then its more immediate and definite value lies in showing that his awareness as to quantum mechanics can, again, be clearly traced to documentary evidence.

Of more critical importance than simply establishing that modern science, and especially physics, was something towards which Beckett repeatedly directed attention throughout his career is, however, the task of assessing both why this was, and also the manner in which he assimilated the ideas and issues that he encountered. The question as to how best to understand Beckett’s approach to physics in this regard is usefully introduced by Ackerley, whose recent work represents what is currently some of the most extensive research in the subject of Beckett and science. Close to the start of his article ‘Beckett and the Physical Continuum’, Ackerley proposes that there is a question to be answered concerning the discrepancy that he holds to exist between Beckett’s documented awareness of the state of physics in the twentieth century and the degree to which he talked about them:

> Why did Beckett apparently ignore the major scientific events of his age? He barely mentions Einstein, whose theories of relativity re-set the Newtonian billiard table; nor Rutherford, who split the atom . . . ; nor Heisenberg, whose uncertainty principle compromised both the act of measurement and the

> nature of the ‘objective’ universe; nor the radical changes to philosophy and literature wrought by the quantum revolutions of the 1920s. (112)

To a certain extent, this is a slightly confusing question for Ackerley to raise: as a writer, why would Beckett be expected to comment more directly and more extensively on the work of physicists? Given also that Beckett was not prone to outlining the details of his thought processes it seems unusual to maintain any degree of surprise at the fact that, beyond the discussion of Einstein in *Dream of Fair to Middling Women*, which will be analysed in more detail later, Beckett did not provide explicit acknowledgement of his engagement with the ideas of twentieth-century physicists. Despite some of the problems with the initial question, however, Ackerley does make an astute suggestion as to the way in which Beckett and science might be studied in conjunction. By essentially emphasising the word ‘apparently’, Ackerley contends that the answer lies in understanding the significance accorded by Beckett to the long history of epistemological and ontological enquiry, and all of its attendant issues. Ackerley’s central proposition is that ‘major scientific events’ of Beckett’s time were not so much ignored as refused a direct and exclusive attention. “Beckett understood the changes wrought by the new generation of physicists to the conceptual form of the natural world, but”, Ackerley argues, “he chose to treat this theme indirectly, from the perspective of a tradition . . . that had evolved over 2,500 years, from the pre-Socratics to Schopenhauer” (113). Considered from the position of such a tradition as the one that Ackerley refers to, contemporary physics, with all of its related philosophical problems, becomes for Beckett, then, another episode in the history of humanity’s attempt to understand physical existence by rational process. Such a view requires, be necessity, that physics and, indeed, ‘science’, be understood in terms similar to those outlined in Chapter One: as being theory in both the scientific and the Heideggerean sense of the word. This is, certainly, very much the manner in which

Ackerley, in an earlier essay, suggests that Beckett's understanding of the notion of science should be understood: with an emphasis on "knowledge, but equally ways of knowing" such as that "epistemology" might function as a closely synonymous term (Ackerley, 'Beckett and Science' 143).

If Beckett's understanding of science, in terms of how he considered both its significance and its problems, was to a large extent as a form of *theoria* in its root sense then whilst his interest in it was one shared with Brecht and Stein it is also, in turn, quite distinct. Although both of the writers analysed in the previous chapters found in the crisis of twentieth-century science the means and the opportunity to establish the grounds for new forms of theatricality, the crisis was itself pointedly explored in their work only in one or two specific plays. For Beckett, it is to be argued here, the situation is different: not only did his awareness of the problems within physics have an influence upon the way in which he conceived of theatricality but, also, his works for theatre represent a continual interrogation of those issues themselves. Recognising that changes to the way in which the concept of the world picture, or the *theatrum mundi*, present in the foundations of both science as well as philosophy, were becoming an important element in the crisis that developed during the Modernist period, Beckett found in writing for the theatre, and in re-conceptualising the way in which theatricality could be used, a means by which to explore and present the epistemological, and ontological, problems at the heart of the scientific project.

As with any critique, however, Beckett's sustained examination of the limits of science is not to be understood as an indication of his having being anti-scientific, and this is similarly so with regard to philosophy. Beckett's interest in the attempts of science to understand the universe and life within it was, as both Lois Gordon and Knowlson have suggested, quite sincere if also seldom noted or acknowledged

(24; *An Exhibition* 52). Rather than being antagonistic towards science, Beckett chose instead to approach it more simply as another mode of enquiry with neither a greater nor a lesser claim to epistemological superiority than any other. Whilst he was interested in what science offered, Beckett was nevertheless equally unable to accept, as Ackerley also posits, the methodology of science as being capable of providing "a sufficient understanding of the natural world" ('Beckett and Science' 144). In this regard, it is now to be argued, theatre for Beckett emerged from the shadow of philosophy and science as a medium through which the limits of 'knowing' could be made apparent, and also, to return here to the reference made to Lehmann in Chapter One, to try to address the question as to how 'seeing' might be seen.

In order to establish in more detail the ways in which Beckett worked to achieve this in his theatre, having now outlined the general scope of his awareness of and engagement with science, this chapter now proceeds to analyse in more detail Beckett's own work in conjunction with those concerns. The first step in doing so will be to conduct a close analysis of the late, unpublished, text 'Long Observation' as a piece that provides what is effectively, in lieu of any more explicitly expository writing by Beckett on the subject of his aesthetic, a critical commentary on how his engagement with theatre might be understood.

4.0 Questioning vision: 'Long Observation of the Ray'

'Long Observation' is an intriguing late text that Beckett worked on periodically between 1975 and 1976; despite numerous revisions and significant redrafting, however, the work was ultimately abandoned and never published. The work as it exists today consists of six manuscripts that provide a proposed outline and structure, the scenario and key themes, and also draft versions of various sections.

Whilst incomplete, ‘Long Observation’ is a text that offers a valuable means to critically approach and understand Beckett’s aesthetic and his particular conceptualisation of theatre. It is, as Connor notes, an “instructive” example of the movement between and across media that Beckett’s work increasingly evinced (‘Between Theatre and Theory’ 87); and also, as William Davies notes, a useful indicator of the Beckett’s later preoccupation with the relationship between form and content (83). Moreover, it also engages, as McMullan argues, with the relation between public observation and interior reflection in a manner pertinent to understanding that which she refers to as “the experience of spectatorship in Beckett’s drama” (148). As such, an analysis of the text provides a useful means to move into a closer and more sustained consideration of Beckett’s theatre itself.

Like much of Beckett’s mature work, ‘Long Observation’ has, on one level, an ostensibly simple premise: a light behind a shutter is observed to randomly but methodically illuminate small areas on the inside of a sealed volume. In starting to analyse the text in its various drafts, however, it becomes readily apparent, without too much accompanying surprise, that it is in fact a subtly complex piece that draws upon many of Beckett’s abiding interests. A rigorous attempt to define and understand a physical space and the means of perceiving it rapidly becomes a profound questioning of both the nature of observation and of rationalism, as well as presenting, as McMullan contends, “a recognition of the limits of embodied vision” (148). Whilst David Jones’ claim that the text is “preoccupied with the scientific observation of the extinction of the human species” (118) is somewhat questionable in terms of its reference to generalised human extinction, there is indeed, however, a clear preoccupation with premise of scientific observation. In the first instance, though, the apparent concern is with establishing the assumed nature of the space within which the observation is taken to occur.

The size and shape of the chamber is one of the aspects most notably revised in the earlier manuscripts; specifically it changes from being a “cubic chamber some eight feet across” (MS 2909/2) to instead being a “spherical chamber full 6 feet in diameter” (MS 2909/3). The primary effect of this is to ensure a greater degree of uniformity within the scenario. Whereas with the cubic chamber Beckett had had to allow for a certain degree of variance in the length of the ray, reaching from the central source to the interior wall, the geometry of a sphere ensures that the length of the ray can be taken as being a constant. This is in accordance with the Beckett’s apparent intention to maintain within the scenario, at least in terms of non-dynamic qualities, the greatest level of simplicity and consistency, as well as the “general movement . . . away from the actuality of a particular location and towards geometrical and mathematical abstraction” (Connor, ‘Between Theatre and Theory’ 83). Further to this, in addition to its constant length within a chamber of infinite symmetry, the ray is also of an unvarying and faint intensity, and “colourless” (MS 2909/2); similarly, the inner surface of the chamber is also exceptionally standard and “seems as far as can be seen the same throughout. The effect is vaguely that of coarse grit” (MS 2909/2). Beyond these elements, however, there is much within the scenario that Beckett establishes that is not known and not so easily defined.

The intensity of the ray, for instance, whilst known to be constant, is not otherwise understood; when this issue is addressed in earlier drafts, Beckett makes clear that it is not known whether the faintness of the ray is due to either the quality of an inexhaustible source or to, instead, the “nursing of some finite blaze” (MS 2909/2). This then is one thing that it is not known; another, emphasised from the start, is the nature of the ray’s movement, its “saltatoriality” (MS 2909/1). ‘Saltatoriality’ refers to the “erratic transfer” of the ray from one area of the volume’s

surface to the next (MS 2909/2): there is no way, it seems, of predicting the course of the observation. Equally, Beckett emphasises that, with the exception of the granular surface of the walls, most of what is understood to be known about the chamber is deduced from a consideration of the ray itself. Throughout the various revisions, the form of the chamber is never a given but is, instead, described as being 'suggested', 'inferred', or 'established' by the constancy of the ray's length from a perceived central source. It is this notion of observing the ray itself that comes to assume increasing importance over the course of the drafts.

If the chamber is sealed, "with no trace of outlet or inlet" (MS 2909/1), then the question that is then to be asked in analysing the text is as to who or what is observing this ray, and from what position. In the second manuscript version there are references to observers: there is "the late Mr Exshaw", who coined the term 'saltatoriality', and there is also, scored out, a mention of "future observers" who might find trace of either inlet or outlet (MS 2909/2). There is, in that same version, also scored out, a passage that introduces a relation of sorts between an eye and a mind:

> Hence dark of rest now lighting to that of thought and now restored each time the mind gives over. That is desists from struggling with some new thing the eye brought back or old brought back again or again with itself its struggling itself desists from struggling with its struggling itself. Or again with why the eye must ever open again and if there lie not somewhere in the mind needing only to be found and brought to light that whereby the eye need never open again. Or again if not the eye alone to blame unable to see and bring back something plain to see which once seen and brought back to the mind would put an end. (MS 2909/2)

The nature of the dialogue between eye and mind, here, is questioned: the eye returns information to the mind that the mind must struggle to understand whilst there is also the uncertainty as to whether there might not exist within the mind something that would remove the necessity of the eye. An eye that has its ability to see effectively also called into question at the same time as the mind's apparent inability to become dependent upon it is brought to the fore. Beckett deleted this

passage from the text in this version but in later ones these same ideas and questions return and with greater emphasis.

It is an “EYE-MIND” that is the most notable element of the fifth manuscript (MS 2909/5), this explicitly compound model of consciousness both acting as an allusion to a tradition of ocular-centrism as well as acting as a conceptual segue into the more extensive final draft of a section of the text. Having decided to substantially simplify the structure of ‘Long Observation’ in the fifth manuscript, in the sixth Beckett writes out a full version of what would be Section A, that concerning “observation”. The first, two-sentence, subsection, serves to again establish a problematic set of relations between the mind, observation, and the eye:

> A2
>
> Long observation that is the sum of countless brief observations separated by spells of uneasy rest.
>
> Uneasy being itself disrupted by brief struggles of the mind with the observed. (MS 2909/6)

Rendered more ambiguous now is our understanding of the observation itself: is the long observation that which the ray is undertaking or does it instead refer to the coterminous observation of the ray by a separate ‘eye-mind’? Certainly, if the earlier drafts, in their focus primarily on the nature of the ray and the chamber, suggested that the ray itself was actively observing then in the final manuscript Beckett places more emphasis instead upon the observation carried out upon the searching ray.

From the last sentence of A4 to final one of the section Beckett himself poses a series of pointed questions as to the nature of the scenario and provides attempts at logical answers:

> Or most arduous of all with where they are the straining eye the struggling mind and how they communicate.
>
> A3

> Question where else in order to observe the inside of the sphere but inside the sphere can the eye be?
>
> Corollary where else in order to communicate with eye inside the sphere but inside the sphere can the mind be?
>
> How given its long past of observations in the light of day could the eye and its long past of struggle with the same mind get inside the sphere?
>
> A2
>
> The eye if inside the sphere in order to observe such things as constant length of ray where else inside the sphere but at its point of equity or centre that is at the source of light itself.
>
> And the mind if inside the sphere where else brief struggle and cease. (MS 2909/6)

Here, then, is a clear return to the question of knowledge and the attendant problem of a seeming dualism of the mind and the body. The mind's struggle with the question as to how and where it communicates with the eye might well, therefore, be labelled as 'the most arduous of all'; certainly it has proved to be one of philosophy's most persistent problems. In accordance to the physical rules of the sphere established at the start, Beckett then in his final return to 'Long Observation' proceeds to logically work to bring the matter of observation back to a point of paradox. To be able to observe inside the sphere the eye must also be within it; if the eye is within the sphere and the mind can communicate with it, and if the chamber is sealed, then the mind must also be inside the sphere; to observe all that it does within the sphere the eye must be located at its centre and, therefore, the inlet/outlet might not be considered as being on the wall but, instead, the light-source; and the mind, too, is positioned at the centre, "where else", concluding that the eye and the mind of the eye-mind cannot exist apart.

This depiction of observation and of comprehension that Beckett develops in 'Long Observation' is, even in comparison to some of his other works, particularly claustrophobic. Within an imagined closed world of geometric simplicity and regularity, a weak and inadequate ray moves methodically erratically and reveals

only small patches of the unremarkable interior surface. The eye-mind observing this observing ray is equally trapped in that all it knows is dependent upon the ray even as it strives to gain a more complete knowledge of the sphere and to move, perhaps, beyond its walls. There is, here, an interesting parallel to a comment made by Schrödinger in *Mind and Matter* upon the interdependent relationship in science between theory and the senses:

> So we come back to this strange state of affairs. While the direct sensual perception of the phenomenon tells nothing as to its objective physical nature (or what we usually call so) and has to be discarded from the outset as a source of information, yet the theoretical picture we obtain eventually rests entirely on a complicated array of various information, all obtained by direct sensual perception. It resides upon them, it is pieced together from them, yet it cannot really be said to contain them. (162-163)

This passage comes from a section in which Schrödinger is arguing that, although methods and technical apparatus may get increasingly sophisticated, the observer can ultimately never be removed from the picture. In stating that any theoretical picture we can devise of physical phenomenon must always be found to be grounded in data "obtained by direct sensual perception", Schrödinger emphasises the fundamental and, as he sees it, unavoidable, significance of the senses to any human episteme. There is also, in the last sentence, an interesting distinction made between the theoretical picture residing upon, and being composed of, sensory data and it simultaneously not being able to "contain them".

If this is an issue that was becoming more apparent within the physics of the quantum era, Schrödinger, like Beckett, also finds in pre-Socratic atomism a similar form of understanding, claiming that he was surprised to discover that "this state of affairs was clearly understood by the great Democritus in the fifth century B.C." (163). The fragment, preserved by Galenus, that Schrödinger is referring to sees Democritus stage an argument between the intellect and the senses:

> [Intellect] says: 'Ostensibly there is colour, ostensibly sweetness, ostensibly bitterness, actually only atoms and the void', to which the senses retort: 'Poor

> intellect, do you hope to defeat us while from us you borrow your evidence? Your victory is your defeat'. (163)

'Long Observation', composed of its countless shorter observations and corresponding struggles between eye and mind powerfully enacts this drive towards the victory that would also be a defeat. As Beckett depicts it, it is also clearly a victory that can never be attained: in the first draft Beckett removes with a stroke of the pen hope for potential later observers to find a way out; the eye seems incapable of finding that which would remove its necessity and need to open once again (MS 2909/6). As Connor contends, in a manner that also carries certain echoes of both Schrödinger and Democritus,

> the act of looking which is so scrupulously scrutinised in *Long Observation of the Ray* reveals the inevitable and 'issueless' predicament of human rationality; a rationality which defines itself by its abstraction from material contingency, but can never fully resist the allurements, the degradation, and the projective force of the body, of language, of time, of theatre. ('Between Theatre and Theory' 98)

In his reference to theatre, here, Connor also importantly emphasises the other critical aspect of 'Long Observation' beyond that of its subject matter, and one that he also considers through the course of his essay, and that is the text's literary form and, more pointedly, its medium.

Whilst it must be acknowledged that the various drafts obviously do not constitute a completed work, the form of 'Long Observation', in conjunction with its subject matter, is particularly interesting in terms of Beckett's approach to theatricality. With its rigorous and methodical plan to describe each of the elements involved in the observations in a predetermined number of sentences, 'Long Observation' is very much a work of speculation; in its analytic depiction of the chamber and the ray, though, ensure that the notion of spectacle is equally central. It is a text that exists at what Connor has referred to as "the problematic edge of what constitutes prose and drama" (87) but, in addition to difficulties that would be involved in actually staging the long observation, holding the piece in distinction

from anything else Beckett wrote is the fact that it contains no human presence (86).

Despite the radical move away from theatre that this might initially be seen to imply, Beckett's position is actually more complex. As Connor rightly notes, whilst 'Long Observation' does on some levels suggest a shift away from "the actualities of space, position and performance, of time, change, and progression" (87) and an attempt to escape the contingencies of these, and those of the body, Beckett's work equally "bears witness to the impossibility of achieving this elimination, whether in prose or in drama" (87). Theatricality becomes, then, for Beckett, the issue that draws together most completely his aesthetic, philosophical and epistemological interests and concerns, in that he pushes it to its most extreme and most fundamental level. Just as Gordon Armstrong argues that theatre and quantum biology are ultimately connected because theatricality is inherent to human identity (215), so too does Beckett, in his drive towards the limit, increasingly find himself presented with the theatrical mechanics that underpin knowledge and representation and which cannot be surpassed.

If 'Long Observation' can be seen, therefore, to exemplify how even in Beckett's most abstract prose writings there is an infiltration of theatricality and the shaping influence of embodied existence, then the pressing question now is as to how Beckett's theatre itself might be understood. Having worked to establish Beckett's philosophical interests and preoccupations, his closely related interest in the development of modern science, and his awareness of issues presented by contemporary physics, it will now be argued that Beckett found, in writing for the stage, a particularly powerful means and medium for examining and expressing these concerns. In his doing so, and in his corresponding and radical exploration of the limits and possibilities of theatricality itself, Beckett, it will be argued, found

himself able to disrupt the philosophy-science binary by conceptualising a bridging and surpassing theatre. To establish that position, this chapter will now critically analyse the ways in which Beckett, over the course of his writing for the theatre, engaged with the key problems presented in 'Long Observation': difficulties concerning the function of sight; the nature of perceivable space; and, the position of self-identity within the world established.

5.0 Concerning the senses: the "usual drivel"

In 'Long Observation' Beckett fuses the senses to the mind to form what he termed an eye-mind and this, as was examined earlier, was done in conjunction with a critical consideration as to both what observation can achieve and what can be said about that. Observation, as term, refers here both to vision specifically, and the act of spectating, but also to the idea of sight as paradigmatic for scientific thinking; as such it also comes to stand in for sense perception in general. Within Beckett's theatrical work this same idea of observation is consistently explored, and critiqued, in terms of its relation to the spatial conditions of the theatre just analysed. Further to questioning the ultimate utterability space and the nature of our ineluctable existence within it, Beckett is also driven, as Gontarski has noted, to interrogate both the way in which we approach it and the validity of the interpretations that we form (*Beckett Matters* 177). This same issue finds an outline of sorts during Winnie's monologue in *Happy Days*:

> WINNIE: . . . Well anyway — this man Shower — or Cooker — no matter — and the woman — hand in hand — in the other hands bags — kind of big brown grips — standing there gaping at me — and at last this man Shower — or Cooker — ends in 'er anyway — stake my life on that — What's she doing? he says — What's the idea? he says — stuck up to her diddies in the bleeding ground — coarse fellow — What does it mean? he says — What's it meant to mean? — and so on — lot more stuff like that — usual drivel — . . . (156)

The short disjunctive utterances separated by brief pauses, here, are common to Beckett's later style; of more immediate interest at this point, however, is the somewhat comic self-reflexivity. Winnie's story is as much a commentary on Beckett's understanding of theatre as it is an account of some earlier, unseen episode. Beyond the absurdity of the situation, Beckett here provides a sharp critique of one mode of observation, and its frustrations. Ruby Cohn has noted that in German, a language in which Beckett was fluent, the phonetic equivalents of the possible names that Winnie provides for the man, 'Shower' and 'Cooker' are less apparently arbitrary: *schauen* means to watch, *gucken* means to look (*Back to Beckett* 182). This emphasis on the idea of observation is then made more explicit through Winnie's description of the couple's 'gaping' at her. Just as Galileo urges Andrea against 'gawping' in Brecht's *Galileo*, the notion of 'gaping' is invoked by Beckett in a manner that endows it with similar connotations of a limited mode of spectating. In this case, however, the specific criticism is less that the couple are not observing in the correct manner but, rather, that they assume that there is within the spectacle itself an intrinsic meaning.

Asking as to what it is "meant to mean" within the context of the passage from *Happy Days* considered above can be taken to imply a belief in some form of determinist order to perceivable reality, at the very least, if perhaps not necessary design with intent. If this attempt to understand is to be dismissed as "drivel", at least by Winnie, it is because it is suggested that it in itself has no meaning; that looking at Winnie and trying to reason about what is seen can ultimately, within that framework, provide no real understanding. Instead, the principle that underpins *Happy Days* in this regard, and indeed will be argued to underpin Beckett's conceptualisation of theatricality in general, is that what theatre enables is not a certain knowledge of that which transpires on stage but, rather, a critical perception

of the manner in which we relate to the world. Accordingly, Beckett's engagement with theatre as a medium is to be argued here to striving to address the long-standing question within Western thought that Lehmann notes, and as was highlighted in Chapter One: "how is one actually supposed to 'see' one's own 'seeing'?" (*Tragedy and Dramatic Theatre* 27). Beckett's work marks an intervention into this problem from a theatrical perspective but equally, and crucially, it is informed in doing so by a marked awareness and critique of the position of science, or 'theory', in this regard. In order to analyse in greater detail how it is that Beckett seeks to engage with this problem using theatre as a means of enquiry in its own right, this chapter must now turn to consider more examples what Beckett both read and said about methods of science, and then consider this in conjunction with further critical readings of his dramatic writing.

5.1 Science and the "spectacle"

"Look at the earth", Hamm instructs Clov at one point in *Endgame* (105). Having just tried and not quite succeeded to manoeuvre back into an exactly central position within his room, a sequence that in itself contains significant echoes of the cosmological de-centering of humanity by Copernicus as Freud understood it (284-285), Hamm, himself bereft of sight, demands information of the outside world from Clov. This blunt, although not overly aggressive imperative, directs Clov's gaze in a different direction to that in which Brecht's Galileo sought to guide that of the philosophers, towards the earth rather than the stars, but there is also a striking similarity between the ways in which this observation is undertaken. Although Clov informs Hamm that he has, in fact, already looked at the earth Hamm is, at least initially, persistent:

> CLOV. I've looked.

HAMM. With the glass?

CLOV. No need of the glass.

HAMM. Look at it with the glass.

CLOV. I'll go and get the glass.

[*Exit CLOV*.]

HAMM. No need of the glass!

[*Enter CLOV with telescope*.]

CLOV. I'm back again, with the glass. (105)

The telescope, here, occupies an uncertain status within the play: first it is proposed as an aid, something to augment Clov's own eyes, and then even before it has been brought onto the stage its value is undermined and its necessity questioned. The "glass" as it is introduced in *Endgame* is presented as being from the start an object that, in terms of greater acquisition of knowledge, is perhaps only of illusory or limited usefulness: it won't provide any significantly different information. Despite this, Clov nevertheless does proceed to observe the world outside through the lens of the telescope; ultimately, however, Beckett returns in the dialogue to the limitations of vision and same question of meaning that plagues Winnie in *Happy Days*. Continuing directly from discussion about what Clov had just seen, Hamm changes the focus from the observation of the world outside to how they might in turn be viewed:

HAMM. We're not beginning to… to… mean something?

CLOV. Mean something! You and I, mean something! [*Brief laugh*.] Ah that's a good one!

HAMM. I wonder. [*Pause*.] Imagine if a rational being came back to earth, wouldn't he be liable to get ideas into his head if he observed us long enough. [*Voice of rational being*.] Ah, good, now I see what it is, yes, now I understand what they're at! [*CLOV starts, drops the telescope and begins to scratch his belly with both hands. Normal voice*.] And without going so far as that, we ourselves… [*with emotion*] … we ourselves… at certain moments… [*Vehemently*.] To think perhaps it won't all have been for nothing! (108)

On the one hand there is a clear trace of the slapstick tradition in Clov's startled dropping of the telescope, but the timing is also equally significant in terms of that which is being said. The notion of their potentially meaning something is evidently held by Clov and Hamm to be just as much 'drivel' as it would be for Winnie in Beckett's subsequent play, but what makes it particularly interesting at this point in *Endgame* is the manner in which the idea is dismissed. Hamm does not refer to being gaped or gawped at; instead, he speaks pointedly of a "rational being" presuming to have arrived upon an understanding of a certain meaning after a sufficient period of observation. The invocation of a hypothetical rational being connects explicitly to Beckett's own opinions as to the claims of the 'Age of Reason' already set out; the specific allusion to the use of observation to generate understanding, matched by what is in effect the abandonment of the telescope within the play is also, however, significant. As it was for Brecht, the telescope is for Beckett an important emblem of a particular kind of thinking, and an examination of how it is positioned within his reading and thought can provide some greater understanding as to how Beckett conceived of the theatre.

It is, again, the '*Dream* notebook' that proves useful in the first instance, here. Drawing from Jeans' *The Universe Around Us*, Beckett notes at one point "Bacon: inventor of spectacle" (146) and, at another, he has written "Neptune calculated (not observed) from observed vagaries of orbit of Uranus (Greatest triumph of human thought) !!" (147). Established, here, is an interesting juxtaposition of enhanced sight and inductive reasoning. The reference to Bacon in this instance is, sadly, somewhat less substantive than the form it takes in the note might initially suggest. The Bacon in question is not Sir Francis Bacon but Roger Bacon, who lived three centuries earlier; "spectacle" refers not to any form of visual scene but is, instead, an incomplete spelling of 'spectacles'. If this is, on one level, an

example of one of Beckett's notes proving to be in itself less significant than might have been hoped, it does, nonetheless, still provide a relatively useful means to frame the paraphrased comment on the calculation of Neptune's existence. Jeans himself refers to Bacon's invention of spectacles as a means to ground and introduce the history and practice of telescopic astronomy, noting specifically that Bacon had set out the means for constructing a telescope that would magnify the appearance of the stars (1). Between this and Galileo's construction of his own telescope in 1610, Jeans establishes a historical connection, albeit one he acknowledges to be indirect and stretched over an interlude of hundreds of years.

From the invention of spectacles to Galileo holding his telescope and heralding a "fateful day for the human race" (Jeans 1), there is, in the introduction to *The Universe Around Us*, a certain importance accorded to the role of technical apparatus. As, of course, is entirely correct: the telescope as a scientific instrument was incredibly significant in making visible phenomena previously inaccessible to the human eye and mind. The enhancement to vision that the telescope offered provided, as the previous chapter outlined, a greater amount of empirical evidence and data for the inquisitive mind to draw upon. Indeed, as Steven Shapin and Simon Schaffer note, during the emergence of modern science towards the end of the seventeenth century new instruments such as the telescope and the microscope were increasingly taken to provide a necessary "discipline" to the otherwise inadequate unassisted senses (36-37). The note regarding the discovery of Neptune, to which Beckett has added a double exclamation mark, relates, however, more specifically to a successful application of mathematical reasoning instead of new achievement in sensory perception (although following the mathematical prediction Neptune's existence was visually confirmed).

This successful prediction and confirmation was received in 1846 as being, as both Jeans and Beckett emphasise in turn, one of the most significant scientific events of the period, a triumph of human reason. Urbain le Verrier had, in making his prediction based upon calculations concerning the observed behaviour of Uranus, seemingly proved the extent to which Newton's laws were able to accurately describe the universe. Here, unlike Galileo's discovery of, say, the moons of Jupiter, a general theory had been used to mathematically predict the existence of a hitherto unknown celestial body, and had been proved to have done so successfully. This pattern of theories and theoretical predictions being subsequently provided by empirical evidence has become increasingly important since the start of the twentieth century, the most striking example of this during the Modernist period arguably being Arthur Eddington's confirmation, through the observation of the total eclipse of 1919, of predictions made by General Relativity concerning the deflection of light. What makes this interesting though is the question as to what can be understood by the fact that Beckett, sceptical of rationalist and scientific methodologies as he is widely held to be, made a particular note of this and marked it "!!".

Insofar as it is possible to address that question, given the unelaborated nature of the note itself, it can be noted that Roger Bacon, "inventor of spectacle", was an influence upon another man with the same surname, one of the later founders of the method of modern science: Francis Bacon. Beckett's awareness of Francis Bacon's work is stems largely from his marked interest in "The Natural Science Period" during his research into Renaissance philosophy, with Bacon being positioned alongside figures such as Descartes and Geulincx (Dirk van Hulle and Mark Nixon 130). The significance of Bacon in this regard was certainly not lost on Beckett, and he has marked in his copy Francesco de Sancti's 1925 *Storia della*

Letteratura Italiana a long passage that “proclaim[s] Galileo, Bacon and Descartes ‘the true fathers of the modern world’” (104). Bacon’s position within this list is primarily the result of his attempt to establish a new mode of inquiry determined by empirical research and inductive reasoning.

Setting out his ideas in *The New Organon*, Bacon aimed to both identify and provide a means to become free from various negative influences upon the process of correct thought and impediments to the progress of science. These were grouped by Bacon into four categories and labelled as ‘Idols’: Idols “of the Market Place”, “of the Tribe”, “of the Cave”, and “of the Theatre” (48). The Idols of the Tribe and the Cave refer, respectively, to the general human tendency toward certain suppositions and to the influence, on the individual level, of education and conversation upon understanding (48-49). The Idols of the Market Place were, for Bacon, the most troubling, being the problems inherent to the use of language, and he argues that these detract from greater understanding of nature and tend, instead, to merely aid sophistry (49). The Idols of the Theatre are, intriguingly, positioned as being potentially the least problematic due to their being, as Bacon sees it, the least innate: they are the limitations imposed upon the mind by “the various dogmas of philosophies, and also from long laws of demonstration” (49). It is with a certain degree of accordance to the principles of the anti-theatrical tradition that Bacon chooses to name these ‘Idols’ after the theatre; he judges that “all received systems are but so many stage plays, representing worlds of their own creation after an unreal and scenic fashion” (49). The idea of theatricality for Bacon clearly continues to be associated with those of deception and the falseness of representation in regards to truth, in a manner that is essentially similar to that of Plato. Indicative of the way in which modern science was to attempt to move away from metaphysics, though, is the fact that the theatrical metaphor is used to also

castigate forms of philosophy. Philosophies treated as ‘dogmas’ were no better, in Bacon’s mind, than theatre and he claims that there exists “a philosophical theatre” that creates ‘plays’ that are as problematic as literary plays in that they are “more compact and elegant, and more as one would wish them to be, than true stories out of history” (59).

Working, in *The New Organon*, to counter these problematic Idols, Bacon establishes a new method of gaining understanding of nature, and offers an improvement upon that of Aristotle (whose own *Organon* Bacon alludes to in his title). In opposition to the practice of demonstration by syllogism, Bacon proposes an inductive method that holds that knowledge should aspire to general axioms by means of inquiry starting with empirical data provided by “senses and particulars” and then “rising by a gradual and unbroken ascent” (43). It is primarily this positivistic grounding in that which has been “observed in fact” (39), and the notion of a clearly traceable continuous line of reasoning, that Bacon holds to make his method a more correct way of ascertaining the truth about nature. Pointedly, though, for Bacon writing relatively early in the seventeenth century, humankind is still considered “the servant and interpreter” of a nature whose “subtlety . . . is greater many times over than the subtlety of the sense and the understanding” (41). It is to an extent also due to this earlier view that Newton’s work decades later in the development of modern science was received as being so monumental in its achievement: it appeared that, in fact, with the correct approach and the right mind the subtlety of the universe could indeed be shown and mastered.

The calculation of the existence of Neptune, that Beckett comments upon in his ‘*Dream* notebook’ and includes in his novel (*Dream of Fair to Middling Women* 221), finds its significance in the apparent proof of the ability of laws drawn from the senses to correctly predict the presence of something not directly perceivable.

Considering Beckett's work, the relevance of this is twofold. First, it ties in with his own broader concerns about the relation between the seen and the unseen, the way in which something unseen is able to make "a legible mark on the seen universe" (Peter Boxall 37). Second, it is positioned within a novel in which Beckett is already throwing into question this same scientific methodology through reference to more recent events.

At an earlier point in *Dream* Beckett depicts a discussion of sorts regarding Henri Bergson and Einstein that takes place between the character Chas and some students encountered on the street. Casting the two thinkers as being as different as a "philosopher and a sociologist", Chas then proclaims that "if it is the smart thing nowadays to speak of Bergson as a bit of a cod . . . it is that the trend of our modern vulgarity is from the object . . . and the idea to sense . . . and REASON" (211-212). This is, in many respects, employed by Beckett as a comic device. Bergson, whose own work on the idea of time did take a different approach to Einstein, was, if divisive, not generally viewed as "a cod"; indeed, his writings were hugely influential during the Modernist period. Moreover, whilst from the transition that Chas claims to be occurring it can be taken that "modern vulgarity" is synonymous with modern science, the perceived trend that he refers to is, at that point, contentious. As the conversation that continues amongst the students following Chas' departure shows, for Beckett none of these notions were to be taken as either especially certain or valid at that time:

> 'Sense' echoed the students 'and reason!'
>
> The difficulty was to know what exactly he meant by *sense*.
>
> 'He must mean *senses*' said a first 'smell, you know, and so on'.
>
> 'Nay' said a second 'he must mean *common sense*'.
>
> 'I think' said a third 'that he meant *instinct*, intuition, don't you know, and that kind of thing'.

> A fourth was curious to know what instinct there was in Einstein, a fifth what absolute in Bergson, a sixth what either had to do with the world. (211-212)

The issue, here, centres around a deconstruction of the role of "sense" in relation to understanding, much of the humour lying in the perceived idea that the term has lost some degree of certainty in its meaning within the context of "modern vulgarity". The initial supposition of it referring primarily to the physical senses gives way first to the alternative position of it being, instead, conventional understanding, and then in turn to the idea of it denoting "instinct", in itself traditionally antithetical to reason. This bears a parallel of sorts to debates that took place between Mach and Planck, and also to an extent Poincaré, concerning the development of theoretical, or mathematical, physics as distinct from one that took its approach only from experimentation. It also, relatedly, can be viewed in connection to the questions that were starting to emerge within the field of quantum physics, and that were outlined in essays such as Planck's Leiden lecture, as to how exactly science should be seen to relate to 'reality'. Accordingly, whilst Beckett takes Einstein as the talking point in *Dream*, the question that the sixth and final student has in wondering as to what either of Bergson or Einstein "had to do with the world" is one that is more central to the debates surrounding quantum theory than those of Relativity.

Challenging the presumed relation between both philosophy and science and the world, and drawing upon the idea of scientific methodology in doing so, Beckett presents in *Dream* an early scepticism as to the strength of that form of seeing. In this, there is a foreshadowing of the eventual abandonment of the telescope by Clov and Hamm in *Endgame*; equally, however, Beckett's most powerful engagement with the issue came with his starting to explore it through form rather than content. In the development of his aesthetic, moving towards his later works, including 'Long Observation', Beckett examined the problems of observation and

scientific approach to the world not by more or less explicitly announcing them but, instead, by making them a visible aspect of the theatrical medium. In doing so, he works to provide a new understanding of both the spectator and the spectacle within the theatrical model.

5.2 The spectator and the spectacle

Within Beckett's theatre, as in that of both Brecht and Stein also, the person in the audience is always conceived of as spectating in a manner that is engaged, critical and frequently foregrounded within the theatrical experience itself. In *Happy Days*, Winnie again proves useful in providing an initial insight into the way in which this investigation of observation itself develops within his writing for theatre:

> WINNIE. Hail, holy light. [Long pause. She closes her eyes. Bell rings loudly. She opens eyes at once. Bell Stops. She gazes front. Long smile. Smile off. Long pause.] Someone is looking at me still. (160)

There is more to this line than some of Beckett's earlier primarily comedic meta-theatrical references to the audience of his plays: Vladimir's comic cry of "There! Not a soul in sight!" whilst gesturing to the audience in *Waiting for Godot* (69) or Clov's sighting of "a multitude… in transports… of joy" in *Endgame* (106). Instead, staring at the audience, Winnie makes clear, here, that the spectator is understood to have a connection to the scene observed on stage and are accordingly implicated; Winnie is making reference not solely to the presence of those in the auditorium but also, and more pointedly, to their role as observers, to their 'looking'.

These more explicit references to the spectating eye and the matter before it appear again throughout Beckett's subsequent work, and not only in theatre. The 1963-65 film *Film*, which starred Buster Keaton, features a "protagonist . . . sundered into object (O) and eye (E), the former in flight, the latter in pursuit" (323). The piece is introduced by Beckett as being rooted in Berkeley's maxim that to be

is to be perceived (*esse ist percipi*) and that it is to be taken as the "[s]earch of non-being in flight from extraneous perception breaking down in inescapability of self-perception" (323). Then, later again, in the play *Play* the male character wonders, toward the conclusion, as to his own ontological status:

> M: Mere eye. No mind. Opening and shutting on me. Am I as much—
> [*Spot off M. Blackout. Three seconds. Spot on M.*]
> Am I as much as… being seen? (317)

As with Winnie in her mound, M. in his urn brings into critical focus the act of observation and the effect that it may have. Berkeley's notion might again here be of some relevance but, in considering Beckett's theatre, it is to be argued that beyond the initial obvious parallel there is a different notion of sight being examined and presented. *Film* ultimately proves to be, at least on one level, a visual joke: the twist that only becomes evident at the denouement is that the "pursuing perceiver is not extraneous, but self" (323). *Play*, by contrast, as well as Winnie in *Happy Days*, also forces another question as the observer, the perceiver, in the theatre has an arguably more complex relationship with what is one stage. Rather than engaging particularly with the issue of apperception, as *Film* does (Ackerley and Gontarski 194), Beckett's theatre is also concerned with the notion of the kind of sight and observation central to scientific enquiry.

In *Play* this is examined through both the remarkably precise theatrical mechanics that would become typical of Beckett's theatre (Cohn, *Just Play* 3) as well as M.'s lines, increasingly so towards the end of the playtext. Trapped in large grey urns with only their heads free, the three characters in *Play* stare forward without deviation throughout the piece and remain in darkness and in silence until illuminated by a spotlight. Whilst it might be the urns that draw immediate attention, despite Beckett stating that in the gloom on stage they should only be "just discernible" (307), it is the spotlight that is key to the play. Located, for preference,

in the footlights, this single beam (apart from on occasions when all three characters are required to speak at one) moves from face to face; its transfer is as immediate as possible, and its illumination is that which prompts instantaneous resumption of speech. Likened by some to a "torturer" (Gontarski, 'Beckett's *Play*' 443), the spotlight essentially fulfils the same double role as the saltatorial ray in 'Long Observation': both observation as well as a means to reflect upon observing.

As an interrogative vision the spotlight is, within the play, one with clear limitations: if it illuminates all three figures the result is incomprehensible; illuminating each in turn makes it critically involved in the production of order and makes it, as M. says "just… play" (313). The audience in the theatre is equally entangled in this problem of observation; the nature of its spectatorship is, as McMullan argues,

> also contradictory: detached observers trying to see the whole picture from the safety of their proper position; but also participants caught up in a production process which entails both the disturbing collapse of the conceptual and perceptual structures through which we construct the actual and the theatrical world . . . . (153)

The concept of the whole picture is one that *Play*, in common with the rest of Beckett's theatre, renders a beautifully frustrating impossibility, unless wholeness can be reconciled with incompleteness and absence. It is, though, to modify McMullan's contention slightly, not so much that *Play* brings into effect the dissolution of the "conceptual and perceptual structures" that she alludes to but that, instead, it both brings them to the fore and simultaneously shows them to be incapable of achieving that which was previously held to be within their scope. The spotlight and the audience in *Play* are together involved in an examination of the manner in which our knowledge and understanding is dependent in its form and extent upon sight and a corresponding embodied need for spatial-temporal order.

This examination is strongly dependent upon the theatricality of the piece and its performance, as can be shown through consideration of one of the resumptions of speech after one of the intermittent blackouts that occur:

> [*Spot off W2. Blackout. Five seconds. Spots half previous strength simultaneously on three faces. Three seconds. Voices proportionally lower.*]
>
> W1. ⎫ Mercy, mercy–
> W2. ⎬ [*Together.*] To say I am–
> M. ⎭ When first this change—
>
> [*Spots off. Blackout. Five seconds. Spot on M.*]
>
> M. When first this change I actually thanked God, I thought, It is done, it is said, now all is going out—
>
> [*Spot from M to W1.*]
>
> W1. Mercy, mercy, tongue still hanging out for mercy. It will come. You haven't seen me. But you will. Then it will come.
>
> [*Spot from W1 to W2.*]
>
> W2. To say I am not disappointed, no, I am. I had anticipated something better. More restful. (312)

In print, W1, W2, and M speaking together is still coherent insofar as a reader is able take each utterance, fixed on the page before them, in turn. Within the script, the instruction "together" is just that, a direction for performance; reading the play, the return to a singular focus marks a period of obvious repetition with some expansion. In performance, however, within the space and time of the theatre, what is apparent is not the repetition but return to a greater degree of clarity. With the spotlight focused on all thee urn-bound figures, with all three in performance speaking together in rapid monotone, the effect is one of confusion and incomprehensibility on the part of the audience. The light is extinguished and then, in returning once again as a single ray, the utterances are re-spoken but in a sequence, rather as they may have been read by a student of the script. Notably, too, however, the sequence of the spotlight's movements does not correspond to

the order in which the lines marked ‘together’ are written and thus were probably read and so any notion privileging the textual version of the play is undermined.

As the spotlight alternates throughout *Play* between extinction, illumination of all three figures simultaneously, and of individuals in immediate succession, the observing audience is made palpably aware that the form of the play and their understanding of it is determined by the fact of their embodied nature as spectators. The behaviour of the three characters as it occurs simultaneously is incomprehensible to the senses; the spotlight’s investigation is not so much an objective one but rather one that is to be seen as constitutive of a certain form of knowledge. This is on the one hand an example of Beckett making the audience aware of “the acts of looking and hearing and the distortions and confusions these processes can produce in performance” (McMullan 134); on the other hand, *Play* also resonates with certain issues within quantum mechanics and with Beckett’s understanding of scientific method.

In these terms, *Play* can to an extent be usefully considered as a form of repeated experiment. The observer wishes to find out something about the nature of that which is not immediately apparent on stage. The general theory (three beams) suggests that the scenario on stage is simultaneously W1 speaking *and* W2 speaking *and* M speaking; the observer, however, is not able to sensibly perceive this. The observer, depending upon the angle of their approach, is able to see certain aspects of the scenario individually – W1 *or* W2 *or* M – and from this is able to arrive at an approximate understanding but the ‘whole picture’ is not comprehensible to an ‘eye-mind’.

Beckett refers, in the notes concerning the lighting, to the figures on stage as being the spotlight’s “victims” (318). Equally, however, the spotlight and the audience also present themselves for consideration as ‘victims’. As much as the

figures in the urns are endlessly compelled by the instruction to “repeat play” (317), so too is the spotlight unable to move beyond its impasse: each repetition of the play marks the continuing inability of its observation to fully describe the situation *as it is*. *Play*, then, evidences Beckett’s use of theatricality to frustrate the claims of rational process and scientific empiricism, and to do so in a way that resonates strongly with the quantum mechanical situation. This mode of thinking and of theatre underpins the mockery of ‘meaning’ that runs through Beckett’s plays, as was highlighted in the earlier reference to Winnie’s dismissal of “the usual drivel”. If the mode of seeing, and the nature of spectacle within Beckett’s theatre is rethought in such a manner then this also contingent upon his having developed a particular understanding the space in which it occurs; this, in turn, now invites analysis.

5.3 The unutterable: concerning space

Space in Beckett’s theatre is far from being incidental and, in fact, it is often as critically present and integral to the performance as are the actor(s) and the audience. Rather than the theatrical space existing as simply a container for the drama of the play, necessary but not to be noticed, as was the case in earlier Naturalist works, for Beckett the space within the theatre is made both dramatically present and integral to our perception of the character on stage. This developed over the course of Beckett’s career from the initial emphasis placed in *Eleutheria* upon highlighting the existence and boundaries of the theatrical space to, in later works such as *Not I* or *Footfalls*, an increasingly important dialogue between two objects of perception: the presence of the actor and space as the presence of material absence. Frequently this also matched by stage directions for ever more focused or minimal lighting.

In *Footfalls* this situation is both strikingly apparent and central to the experience of the play. Labelled by Paul Sheehan as being a "spectral" play (141), *Footfalls* features a predominantly grey woman, May, "grey hair, worn grey wrap" (399), and another woman who is perceived only as a voice "from dark upstage" (399), *Footfalls* is as much about darkness and the negotiation of space as it is about that which the two women say. Beckett's stage directions for the play are characteristically specific as to the physical conditions to be presented: the stage is to be largely unlit with most of the light that there is to be focused most strongly upon a narrow strip "downstage, parallel with front, length nine steps, width one metre, a little off centre audience right" (399). It is along this strip that May paces in a regular and repetitive manner, her feet receiving the most light and her head the least whilst her footsteps create a "clearly audible rhythmic tread" (399). This pacing, Beckett informed Billie Whitelaw in a letter offering her the exclusive opportunity to premiere the role of May, is "the essence of the matter, to be dramatized to the utmost" ('To Billie Whitelaw' 424). Within the play the centrality of the pacing that Beckett that emphasises is made evident not only through the visual focus being largely limited to May's feet and the pointedly audible footsteps, but also through the manner in which it provides a base rhythm for the dialogue and grounds it in a particular negotiation of space. The full effect of this is, in a similar fashion to Stein's landscape plays, only really evidenced through performance but can nevertheless still, be identified to an extent in the text:

> V. I had you late. [*Pause. No louder.*] In life. [*Pause.*] Forgive me again. [*Pause. No louder.*] Forgive me again.
>
> [*M resumes pacing. After one length halts facing front at L. Pause.*]
>
> M. What age am I now?
>
> V. In your forties.
>
> M. So little?

V. I'm afraid so. [*Pause. M resumes pacing. After first turn at L.*] May. [*Pause. No louder.*] May.

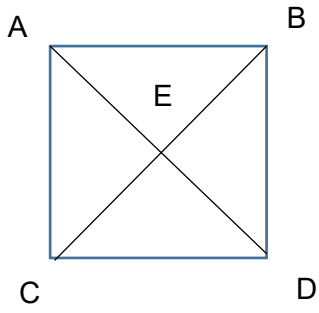
M. [*Pacing.*] Yes, Mother. (400)

The rhythms of speech, here, with their frequent pauses, interweave with May's pacing and its own occasional pauses; similarly, at the same time the nearly incessant material negotiation of the illuminated strip is balanced against minimisation of May's perceivable presence on stage. The effect, in this instance, is quite unlike that of another Modernist play with similar focus on feet, *Feet* (1915) by Filippo Marinetti, in which the stage directions demand that "[t]he public see only legs in action. The actors must try to give the greatest expression to the attitudes and movements of their lower extremities" (171). Whilst *Feet* limits the view of the actors' bodies by means of a curtain, and seeks to make the feet and legs express all that the rest of the body would normally do, May's illuminated pacing feet in *Footfalls* do not function as an expression of dramatic character. The almost metronomic movement of May up and down the same stretch of space in the same number of steps, whilst occasionally also pronounced in the dialogue, "M: . . . One two three four five six seven eight nine wheel one two . . ." (399), operates largely on a more fundamental level.

May's pacing serves, in *Footfalls*, as another example of Beckett's long preoccupation with the manner in which people relate to, and exist within, the space of the material world; her feet and her steps are presented as providing the grounding for her continued existence. For Deleuze this form of movement through space within Beckett's work is to be seen as a process of "exhausting the possible" ('The Exhausted' 11-12). Turning to Beckett as a means to develop some of his own philosophical ideas, Deleuze suggests that Beckett's aesthetic operates around the idea of a combinatorial exhaustion that is rooted in the "end[ing] of possibility" (11). In this regard, space, as Deleuze sees it, both in Beckett's work

and in general, is defined in the first instance by its possession of potentiality: both the “possibility that something realizes *itself* and the possibility that some place realizes it” (13). One of the ways in which possibility is exhausted, Deleuze argues, is through the “extenuation” of that potentiality, and it is that that the negotiation of space by characters in Beckett’s work strives to achieve (12-13). There is certainly a great deal of merit to Deleuze’s argument, and his reading of *Quad*, a late work originally for television in which four numbered players in gowns and cowls shuffle in constant motion around and across a square, is compelling. Deleuze’s assessment of the way in which space is treated by Beckett is, however, limited to an extent by the fact that his considers it primarily as being primarily a geometrical concern wherein the negotiation of a space adds nothing to the understanding of identity. Whilst such an interpretation does work to a certain extent with *Quad* it fails to account for the full significance of May’s exhaustive pacing in *Footfalls*.

The reason as to why it is that Deleuze turns to *Quad* as being the exemplar Beckett work in so far as space is concerned is quite readily apparent upon even an initial reading of the stage directions that constitute the entirety of the text of the play. On the page, it looks at the start somewhat like the introduction to an applied maths problem:

> Area: square. Length of side: 6 paces.
>
> 
>
>
> Course 1: AC, CB, BA, AD, DB, BC, CD, DA
>
> Course 2: BA, AD, DB, BC, CD, DA, AC, CB
>
> Course 3: CD, DA, AC, CB, BA, AD, DB, BC

> Course 4: DB, BC, CD, DA, AC, CB, BA, AD
>
> 1 enters at A, completes his course and is joined by 3. Together they are complete their courses and are joined by 4. Together all three complete their courses and are joined by 4.
> ……..
>
> End of 1st series. 2 continues, opening 2nd series, completes his course and is joined by 1. Etc. Unbroken movement. (451)

Beckett then proceeds to list the combinations of players in each of the four series, as well as of the types of accompanying percussion and the colours of both the gowns and the lighting. In all cases there is a clear and repetitive emphasis placed on the idea of the range of possibilities available: "[a]ll possible light combinations given", "[a]ll possible percussion combinations given", "[a]ll possible costume combinations given" (452). Deleuze's reading of Beckett in 'The Exhausted' engages well with *Quad* on this level: as a reading, as an approach that views the dramatic work only in the abstract. In his argument, Deleuze takes *Quad* to be both "Space" and also "*a* square" (12); he stresses the players first as being "unaffectable" but then, shortly after, claims that they will undoubtedly "tire themselves out and will drag their feet more and more" (12-13). The main problem with such an analysis is that it essentially operates upon the assumption that Beckett's primary focus in the piece was the idea of a square as a geometric entity; that is, as it is depicted in the stage directions above and not space an any physical sense. Deleuze's relegation of the bodies of the players to a secondary position is similarly contentious, as *Quad* no more takes the idea of a square as its first concern than *Footfalls* does the line upon which May walks. Whilst there is an exhaustive quality to the movement in both works, in each case Beckett's interest is found ultimately in the way in which the actor is present within space, the space of the stage and the theatre, and not in abstract spatial forms. The diagram of the square in the script for *Quad* is useful but only if considered as being a form of stage direction or a production note, and not as the piece itself: for Beckett, as

Gontarski argues, it was the process of performance that was crucial, the "vicissitudes of theatre" over the "stability" of the text (*Beckett Matters* 177).

Working from that critique of Deleuze's reading in 'The Exhausted' of Beckett's work, it is to be argued instead that what pieces such as *Footfalls*, as well as *Quad*, illustrate particularly effectively is a critical interest in how material entities exist and behave within space, rather than in space primarily as an abstract concept or as rendered into an image. Indeed, as Beckett commented to Christian Ludvigsen concerning the process of writing for theatre, whilst the "mental stage . . . is indispensable to the writing of a play, the results are only valid in so far as they function satisfactorily under given real conditions" ('To Christian Ludvigsen' 55). The space of the theatre itself, then, is to be taken as being crucial to the play, rather than the space that is imagined either during the writing process or whilst reading the play-text. In this regard, the manner in which Beckett approached these 'real conditions' can be seen to have been informed in part by his research into contemporary physics, evidenced by a note in his '*Dream* notebook' concerning the effect of Einstein's work on the understanding of space according to physics.

The note in question is, like many of the others taken by Beckett, relatively concise: "Dimensions of space determined by the amount of matter it contains. More matter, less space. No matter, infinite space" ('*Dream* notebook' 150). This is an essentially accurate paraphrasing of a section found toward the end of the first chapter of Jeans' book, in which he summarises both Einstein's theory of relativity and the new cosmology that subsequently develops. On the page immediately previous to the one that Beckett took notes from, Jeans also makes an interesting comment about the nature of space within relativity theory, particularly insofar as it corresponds to its perception otherwise:

> This curved space is not, it is true, the ordinary space of the astronomer. It is a purely mathematical and wholly fictitious space, in which the astronomers'

> space and the astronomers' time are inextricably bound together and enter as equal partners. (76)

The implication of this statement is initially somewhat confusing in its use of the phrase "purely mathematical and wholly fictitious": the suggestion here would appear to be that there is a form of qualitative difference between the 'reality' of the Newtonian and the Einsteinian accounts of the universe. The "curved-space" of space-time is in fact neither any more nor any less mathematical or fictitious than the so-called "ordinary space" that was understood by astronomers before; the only difference is that its laws relate less directly to common experience. The point that Jeans is presumably intending to convey, therefore, is that the universe specifically defined by General Relativity is not so readily observed or conceived of in everyday terms and language. This might well be the case in an everyday sense but what Beckett's theatre works to make evident, in engaging with a new conceptualisation of the *theatrum mundi* metaphor, is precisely this revised understanding of the relationship between matter, space and time, and the position of people within that model.

The idea of space and matter as being closely determined by one another, insofar as they can be experienced, runs throughout Beckett's theatrical output, building on the critique that he began in his prose works. In the notion of "no matter, infinite space" there is an echo to the problem central to the earlier novel *Murphy*; although Einstein, unlike Geulincx devotes little time to the consideration of ethics in the philosophical sense there is, as Beckett presents it, a similarity of sorts between the impossible freedom of Murphy's 'little world' and the impossible infinitude of space devoid of matter. This idea does also persist as a theme in his prose work after *The Unnameable*, with earlier crowded settings such as Dublin or London largely abandoned in favour of barren landscapes and vague figures. In *How It Is* the lived existence of the central figure consists primarily of crawling

endlessly through “the mud the dark the silence the solitude” (8); it is in theatre, however, that Beckett is able to most effectively engage with this notion of space in relation to matter. This is, to an extent, carried forth by a conviction held by Beckett from at least as early as 1948 when he wrote to Duthuit concerning *Eleutheria*: “I shall never know clearly enough how far space and time are unutterable, and me caught up somewhere in there” (‘To Georges Duthuit, 11 Aug. 1948’ 98). Pursuing an answer to the question of this potential unutterability becomes a central part of Beckett’s theatrical endeavour or, rather, the pursuit becomes in itself the answer.

In light of that, *Footfalls*, and also *Quad*, can be understood as presenting theatrically, in a critically exploratory manner, all of those problems: the extent to which both space as well as time remain ultimately unutterable; the perceived relation between matter and space; and, a sense of self that exists as caught up in all of that. May’s world in *Footfalls*, like that of so many of Beckett’s characters, is ostensibly divided between the ill-lit strip of corridor in which she paces and the dialogue and recollections shared with V. This division is only ostensible because, in fact, the form of theatricality that Beckett employs within his theatre has the effect of enforcing the idea that these two worlds do not, and cannot, exist apart; that if all material traces are removed, nothing can remain but space. Whilst the stage is largely in the dark, and most of May’s body tending also toward being unseen, the persistent pacing is not simply an exhaustive process but also what has become an involuntary, or intrinsic, defining of finitude: it delimits the extent of empty space of the theatre and anchors May within it, despite her words. In this regard, the close of the play is of interest, presenting a finality that is many ways unusual within much of Beckett’s work, particularly of the middle and later period, as he frequently adopted the strategy of implying endless repetition or process,

ending either the narrative or lowering the curtain whilst action was still continuing. With *Footfalls* this is notably different:

> M. . . . Will you never have done? [*Pause*.] Will you never have done… revolving it all? [*Pause*.] It? [*Pause*.] It all. [*Pause*.] In your poor mind. [*Pause*.] It all. [*Pause*.] It all.
>
> [*Pause. Fade out on strip. All in darkness.*
>
> *Pause.*
>
> *Chime even a little fainter still. Pause for echoes.*
>
> *Fadeup to even a little less still on strip.*
>
> *No trace of MAY.*
>
> *Hold ten seconds.*
>
> *Fade out.*] (403)

At the end, here, there is neither body nor voice: no 'trace' of May at all. Seemingly, within Beckett's theatrical vision, in order for the thoughts to stop revolving in her mind, May's bodily presence also has to be removed in its entirety as it, and its various vicissitudes, was the source of the dialogue. In the final, sustained, ten seconds of near darkness on the stage, however, it is the audience that is made the subject of the play, or rather of the theatrical experience. Presented with a stage newly devoid of May, spectators are shown for ten measured seconds that the play goes beyond its content and that they too are caught up in the same space and time.

The question that now presents itself at this point is as to how, in the form of theatre that Beckett developed, given the ways in which he rethought observation and the significance of space, the idea of character and identity featured within his theatrical writing.

5.4 A self suspended in matter and language: *Not I* and *What is Life?*

Written in 1972, *Not I* is simultaneously both one of Beckett's most striking plays and one of the most demanding upon the performer: the only thing that is "more terrifying than *Play*" for an actor, according to David Warrilow, for whom Beckett wrote *A Piece of Monologue*, "is *Not I*" (qtd Jonathan Kalb, 231). Itself a monologue, *Not I* consists of a stage "in darkness but for MOUTH, upstage audience right, about 8 feet above stage level, face lit from close-up and below, rest of face in shadow" (*Not I* 376). The only movement comes from a shrouded "auditor" who stands downstage and raises and lowers their arms briefly on four occasions (376); the rest of the play consists of Mouth uttering at considerable speed a monologue that has neither a beginning nor an end, the curtain both raising and lowering on it. It is, as Paul Lawley claims, a "magnetic . . . unignorable" stage image (409), and it is also one of Beckett's most pointed explorations of the notion of self and how that might be both formed and perceived. It is perhaps a testament to the power of *Not I* as a play that it has received critical attention not only within the field of the Arts, but also psychiatry. Whilst there is much that can be gained from approaching the play through the lens of psychology or psychiatry there is also, however, as G. Armstrong suggests, an argument to be made that finds in the play evidence of Schrödinger's influence upon Beckett's thought concerning the nature of human experience (218).

On one level, *Not I* is very literally a refusal to abandon the third-person and an avoidance of an 'I' that would indicate clear identification. The monologue speaks only in terms of 'she' and 'her': "...no stopping it...something she–...something she had to–...what?..who?..no!..she!..[*Pause and movement 3.*] ...something she had to–" (381; ellipses in original). Mouth's use of the third-person is, then, not simply an avoidance of an 'I' but an active denial of this: the exclamatory "no!..she!.." that

appears alongside the auditor's movements are some of the relatively few instances in which particular emphasis is implied in the text. Further to this refusal to identify, *Not I* also provides a striking critique of what it is that can be taken to constitute our sense of self. Much of Mouth's monologue consists of small bursts of imagery roughly linked together:

> ...all that together...straining to hear...piece it together...and the brain...raving away on its own...trying to make sense of it...or make it stop...or in the past...dragging up the past...flashes from all over...walks mostly...walking all her days...day after day… (380; ellipses in original)

There is, again, here, the seeming futility of 'trying to make sense' that runs as a theme throughout Beckett's work. Part of the issue of 'making sense' in *Not I* is rooted in the question as to whether the disjointed utterances that are spat forth so fast as to often be both disorientating and agonising (Gerry McCarthy 462) are to be understood as presenting a disintegration of identity or else something essentially the opposite. As Enoch Brater sees it, the former is the case: he claims that what *Not I* presents is "an image not of wholeness . . . but of fragmentation and destruction" (196). It is the idea of destruction that Brater introduces that is particularly significant, here, as he invokes it to argue that Beckett is attempting to show a specifically negative process and that the play is working toward a greater state fragmentation. There is a certain degree of validity to such reading but it is also one that quite strongly rooted in the traumatic content of the narrative, such as it is. There is another argument to be made, however, one that G. Armstrong proposes and that will be developed further here, that focuses to a greater extent on the idea of 'piecing it together' and that applies more generally across Beckett's work.

The monologue that Mouth delivers is undeniably fragmented, coming, as has been shown, in staccato bursts that are both rapid and incessant. This, though, can also be seen as presenting a constructive process, albeit one that has no definite

end. As with Stein's idea of the continuous present, and the ideas of James and Whitehead that underpin that, the fleeting images and memories of Mouth are constantly being compiled and composited. The question that Beckett might then be seen to be addressing is that concerning how exactly it is possible to both conceive of and present a self that does not exist as a fixed unitary entity. It is in focusing on this conceptualisation of self, and of character, within Beckett's theatre, and especially in *Not I*, that Schrödinger's *What is Life?* provides a useful alternative approach to the majority of those currently taken within existing criticism.

In itself, *What is Life?* is a short work with an interesting history and great scientific significance, and it serves well to exemplify the nature and the breadth of Schrödinger's philosophical outlook. He was well-acquainted pre-Socratic philosophy and, like Beckett, Schrödinger also took a great interest in the work of Schopenhauer and had read everything the philosopher had written (Walter Moore 111). Although a theoretical physicist best known for his quantum mechanical wave equations, as well as the paradox that bears his name, Schrödinger's *What is Life?* is a text that in fact impacted more directly upon the emerging field of molecular biology and genetics. The book emerged from a series of public lectures delivered in 1943 at the Dublin Institute of Advanced Studies, the place at which Schrödinger eventually found himself after having left Europe following the rise of the Nazi party. These lectures were an attempt to address a particular question, namely: "How can the events *in space and time* which take place within the spatial boundary of a living organism be accounted for by physics and chemistry?" (*What is Life?* 3).

Schrödinger's approach to this problem, as a physicist and a founding father of quantum mechanics, is exceptionally rigorous and insightful and, has been said, also proved to have a significant impact upon subsequent research in genetics.

The concept of DNA as being an “aperiodic crystal” (77) as a means to explain biological heredity that Schrödinger develops over the course of the work is credited by Francis Crick and James Watson as having helped them to arrive at the double-helix model of DNA that we have today (Siddhartha Mukherjee 132). In working towards the idea of this aperiodic crystal, though, Schrödinger also examines the nature of physical laws as established by classical physics and the ways in which this relates to both the new quantum mechanics as well as to human understanding. This, to a significant extent, consists of his emphasising two main points. Firstly, that even before the quantum revolution the laws of classical mechanics must be understood as being, despite their appearance of preciseness, statistical in nature: because of our biology, and also because of constant chaotic motion of small particles, we deal only with averages (9-10). Secondly, the idea of entropy is stressed by Schrödinger to be of particular relevance to an understanding of life and he is led to argue that “the device by which an organism maintains itself stationary at a fairly high level of orderliness (= fairly low level of entropy) really consists in continually sucking orderliness from its environment” (73).

Drawing together all of the considerations of *What is Life?*, the final chapter, entitled ‘On Determinism and Free Will’, sets out Schrödinger’s understanding of their philosophical implications. In large part, these implications appear to be concerned with the question of how to understand the concept of consciousness and of the “I”. Schrödinger strongly refutes the idea that consciousness can ever be experienced in the plural, but he argues that this is a supposition that has come to be accepted by “[p]robably all simple, ingenuous people, as well as the great majority of Western philosophers” (88). This, he posits, emerges from a perception of that fact that there many similar bodies in existence that makes the “the

pluralization of consciousnesses or minds" quite a suggestive response: there are, by such an account, many distinct "I"s. Schrödinger, however, seeks to propose another understanding and, drawing upon Schopenhauer and the Upanishads as well as his own work, he suggests that what we perceive as "I" is more akin to a canvas for data:

> Yet each of us has the indisputable impression that the sum total of his own experience and memory forms a unit, quite distinct from that of any other person. He refers to it as "I". *What is this 'I'?*
>
> If you analyse it closely you will, I think, find that it is just a little bit more than a collection of single data (experiences and memories), namely the canvas *upon which* they are collected. And you will, on close introspection, find that what you really mean by 'I' is that ground-stuff upon which they are collected. (89)

That which is commonly perceived as "I", then, is not in itself anything substantive but is, instead, the average, or aggregate, of a great amount of sensory data. It is this notion of "I" as canvas that, as G. Armstrong argues both tied into Beckett's earlier philosophic interests and also provided him with a powerful new means to approach his abiding intellectual preoccupations (218). What *Not I* presents, it is to be argued here, is this idea of a single, unitary, "I" as being illusory: the play denies not only personal identification but also of a particular notion of self.

Mouth's monologue presents self, or character, purely as experiences and memories that are attempted to be pieced together. Insofar as the memories in *Not I* are evidently distressing and Mouth immobilised in an endless recounting of the past without real reference to the present, Beckett's play also engages strikingly with Schrödinger's closing proposition in *What is Life?*:

> And even if a skilled hypnotist succeeded in blotting out entirely all your earlier reminiscences, you would not find that he had killed *you*. In no case is there a loss of personal existence to deplore.
>
> Nor will there ever be. (90)

It is precisely this impossibility, however, that, in *Not I*, Mouth is deploring: not a loss of 'personal existence' but rather the fact that it cannot be lost. She is caught

in a perpetual struggle with the idea of conscious self composed only of a collected sequence of experiences from which she can't adequately distance herself: "..can't stop the stream...and the whole brain begging...something begging in the brain...begging the mouth to stop…" (380; ellipses in original). As long as Mouth continues to speak, her "I" persists because although she may talk about the past in the third-person it remains a part of the canvas that she continues to develop.

This concept was one that assumed a particular pertinence for Beckett in terms of his engagement with the notion of theatricality itself: Mouth is not one his prose creations but exists, instead, in the space and time of the theatre. *Not I* provides an especially notable exemplification of the way in which Beckett explored a different way of thinking about the nature of the subject within the world as understood by twentieth-century physics. Having established the inescapable primacy of the theatrical, and introduced distinct ways of rethinking space and observation in these terms, Beckett also increasingly worked to present a form of character that reflected the perceived reality of this different theatrical model. Suspended eight feet above the stage and surrounded by darkness, the illuminated mouth in *Not I* engages with the same concerns regarding matter and space as were outlined in the analysis of *Footfalls* and, as a sensory experience, the play poses the same challenges to the limits of complete understanding as were developed throughout his theatrical work. Beckett works to express through his theatre the idea that identity, insofar as we can be aware of it, is limited to being the perceived accumulation of moments and an observation of that. The staging of *Not I* is crucial to the development of this idea: the minimisation of the presence of the actor's body to merely a mouth that occupies a fixed and finite point within space, and the endless and shifting monologue that it utters, necessitate that the audience view the play not as fixed representation but as an active process to be experienced in

its own right and of which they are a part (Gontarksi, *Beckett Matters* 160). The problems underlying the limits to our knowledge, so central to the debate within physics and to Beckett's own thought, thus find particularly poignant exploration in the theatrical speculation of *Not I* in which the nature of human experience is so strikingly isolated. In considering Mouth speaking herself in darkness high above the stage, Bohr's comment upon one of the philosophical implications of quantum mechanics suggests itself: "we are suspended in language" (qtd in Roger Newton 176). Beckett, however, develops this idea one step further in his theatrical speculations and in *Not I*: we are, as the play presents it, not only suspended in our language but also in our materiality, and in a space that we can neither fully escape nor fully give rational expression to.

6.0 A theatre of misology?

In concluding, what must be addressed in some further detail is the manner in which Beckett's theatre, as it has been analysed here, can be understood as an autonomous mode of enquiry in relation to both science and philosophy as it was posited to be at the start of the chapter. The "exact nature" of Beckett's theatre, Badiou contends, has not "been rendered entirely clear" ('Tireless Desire' 71); whilst the notion of exact clarity in that regard might well be a false aim, what is to be claimed is that Beckett engaged with the question of theatricality so as to actively show and critique the foundations of theory and the world that it establishes. This is to be done by examining the way in which the question of representation is raised by Beckett throughout his work. In the '*Whoroscope* notebook' Beckett wrote down, without explicit contextualisation, "Misology = hatred of theories" (MS 3000), and whilst this can be taken as being of relevance to

his entire oeuvre it his theatrical work, it is to be argued, that engages most strikingly and persistently that idea.

As was discussed earlier in general terms, but bears repeating here, Beckett's 'misology' as it is found in his work consists not so much of hatred of theory itself but of the epistemological status that it claims: his dislike is directed towards the perceived capacity of theory to provide a fixed and adequate account of existence. Beckett does not hate science, nor philosophy for that matter, but like both Stein and Brecht did in their own ways, he was convinced that they had limits that were increasingly being exposed. In this regard, Hugh Culik's brief study on Beckett, science, and mathematics provides an account of Beckett's approach that is interesting both for its strengths and its slight limitations. For Culik, Beckett's texts are to be seen as drawing upon "the domain of systematic sciences" with the intention of making their "consistency and completeness" appear problematic (349). By alluding to moments in history in which scientific theory recognised that its aspiration to this completeness was failing, Beckett's works, Culik posits, "both comment upon and participate in cultural anxiety about the limits of representation" (349). As a general outline, Culik's claim is valid to a certain extent, insofar as it both makes the case for Beckett's engagement underlying epistemological claims of science and connects this to the question of representation. There are some problems with Culik's approach, though. First, that it appears to imply an "anxiety" on the part of Beckett that is not in fact present and, second, that the argument limits itself to consideration of written texts, allusions, and problems of the word. Beckett's work does indeed position itself within a broader cultural, and Modernist, concern about the possible limitations of representation, but it does not reflect an anxiety on his part. In fact, what his comment to Haerdter and the analysis that has been conducted in this chapter show, is that Beckett welcomed the undermining of

the old belief that modern science was capable of fully explaining the universe. Similarly, whilst Culik's noting of the manner in which Beckett positions "parallel systems", such as astronomy and astrology, against each other in his early novels so as to "negate each other's claims to consistency and completeness" (350) is useful it does not particularly take into account the extent of Beckett's critique of those claims and the role that theatricality had within that.

Throughout his work, theatricality becomes for a Beckett a means to explore critically the ways in which our embodied nature defines our experience and understanding of the world. Eschewing the notions both of the total description of an empirical reality and also of the possibility of completely abstracted idealism, Beckett uses the space of the theatre to present the scientific world picture at its limits and in its incompleteness. Key to his doing this was his noting of the changes that were occurring within physics during the twentieth century concerning the not only the understanding of space, time, and matter, but also the means by which it generated it knowledge. Developing a form of theatricality that took these changes into account, and moved away from ideas of direct representations of 'reality' taken as something concrete, Beckett's writing for the stage worked to bring theatre out from under the shadow of science and philosophy. Beckett does not propose theatre to be any more capable of providing answers than those other modes of thought because, as he understood it, the quest for explanations of reality was futile in the terms that had been set out; instead, he positioned the three within the twentieth century as simply being different means of addressing experience. Just as quantum mechanics moved toward the idea that what physics could tell us was not what something was but rather how it could be seen to behave, so too did Beckett's theatre increasingly concern itself with how we perceive rather than what we perceive. As such it also operates largely in accordance to an understanding of

nature that he first proposed in his 'Three Dialogues' on art with Duthuit when he proposed that it be taken to be "a composite of perceiver and perceived, not a datum, an experience (138). What Beckett's theatre presents is this experience.

The question as to whether it is *presentation* or *representation* that is best applied to Beckett's theatre arises at this point, and the possibility for a blurring of the distinction between the two can be seen to have existed for Beckett from as early as his time as an acolyte of Joyce. Writing in defence of what was then still *Work in Progress* Beckett claims in 'Dante...Bruno.Vico..Joyce' that in Joyce's work "form *is* content, content *is* form . . . His writing is not *about* something; *it is that something itself*" (27). If there is room for this claim to be made in regard to Joyce's prose then, equally, if not more so, there are grounds for applying it to Beckett's theatre. Indeed, Kalb is explicit in doing so, arguing that

> Beckett's theatre does not represent scenes from another time – or rather it does not only do so. It creates scenes who subject matter is their duration in present time. His dramas are not *about* experiences; *they are those experiences themselves*. (3-4)

For Kalb, the entirety of Beckett's theatrical aesthetic hinges upon what he identifies as being a blurring of "presentational and representational action" within it (3). As such, in his suggestion that Beckett's plays are experiences rather than being about experience, Kalb is suggesting a move away from the old Platonic critique of theatre as being something that only operates mimetically at a problematic degree of remove from truth and ideal reality. In speaking of 'experiences' in the plural, however, Kalb somewhat delimits the full depth of Beckett's inquiry: it is, primarily, experience in its most fundamental sense that Beckett is concerned with, not individual experiences. What Beckett is working to achieve in his work for the stage is not presentation of a particular experience but, rather, to enable a critical experience of experience, to allow seeing to be seen.

That notion of Beckett seeking to show the way in which people relate to and seek to make sense of the outside world is raised by Maude, who elects, in contrast to Kalb, to continue to speak mainly in terms of representation as opposed to presentation:

> The challenge for Beckett's writing would not only be to re-imagine the relationship between subject and world, and hence to outline a new phenomenology of perception, but to create a mode of expression in which these re-imaginings could be represented. (33)

The re-imagining that Maude refers to here resonates strongly with Beckett's comment to Haerdter about the fact that as he saw it "the tie between the self and things no longer exists" (qtd in McMillan and Fehsenfeld 231). The use of the term "represented" by Maude in this instance is largely necessitated by the fact that despite highlighting in a chapter concerning Beckett and vision that "the embodied nature of vision in Beckett's work has been largely overlooked" (24) she then proceeds to focus almost entirely on his prose, and does not mention his theatrical work at all. As such, she is indeed largely discussing ways in which forms of embodied perception can be represented in text. This is somewhat of a limiting factor to her overall argument as whilst the dynamics of vision do maintain an important presence throughout much of Beckett's work, the medium of expression through which he was able to most effectively engage with them was the theatre, being in itself grounded in the idea of sight. One of the strengths of Maude's reading, though, even if it does problematically ignore a major part of Beckett's oeuvre, is that she introduces Heidegger's understanding of the world picture into her analysis. Considering Beckett's engagement with the problematic relationship between subject and object, Maude presents the world picture as described by Heidegger as being a conceptual model against which Beckett sought to react, noting his early approval of that which he termed "deanthropomorphizations" in the landscape paintings of Cézanne (Maude 29; Beckett, 'To McGreevy' 223).

In his re-conceptualisation of the way in which theatricality can be both understood of and used, and in his incorporation of this into his long critique of the methodologies of science and rationalist philosophy, Beckett was able to conduct his own examination of the limits of the anthropomorphic world picture. Maude makes reference to the significance accorded to science by Heidegger in the development of the world picture of modernity, but does not analyse the issue further (29). For Beckett, however, although he had no clearly evident interest in Heidegger's philosophy (Rodney Sharkey 411), it is precisely the idea of the world picture of classical physics as being unknowingly illusory that he aimed to explore. Understanding, as physicists at the start of the twentieth century did also, that the metaphor of the world as theatre was both more central and more complex than had previously been granted, Beckett uses his own writing for stage to both on the one hand show the impossibility of removing theatricality from experience and, on the other hand, to enable a perception of our existence within that. Heidegger posited that within modernity "precisely nowhere does man today any longer encounter himself" ('Science and Reflection' 27) but what Beckett increasingly worked towards through his theatre was the experience of such an encounter. Through his deliberate and radical engagement with existing theatrical conventions, informed by his awareness of the new challenges that had presented emerged within science, Beckett worked to make present the limits of representation and to uncover the processes through which science constructs reality.

Conclusion

The theatre today continues to be a site of formal and conceptual innovation, and science progresses ever further in the exploration of its new paradigm. What began during the Modernist period, and what this thesis has undertaken to examine, was just that: a beginning. Although there has been no standstill in creative and intellectual engagements with the stage, and nor should there have been, the particular legacy of the Modernist re-conceptualisation of theatre's possibilities remains, still, a guiding influence in contemporary practice and theory. To a significant extent this is due to the fundamental nature of the ideas central to the radical overhaul of theatrical tradition carried out by all three of the playwrights and theatre-makers considered in this study. In thinking about theatre critically, and in doing so with an awareness of its relation to the historical and contemporary claims of science and philosophy, Beckett, Brecht, and Stein were instrumental in the development of a new theatrical aesthetic that not only reflected the changed realities of the time but also, more significantly, reflected upon them. As quantum mechanics and its philosophical implications have become increasingly absorbed into the broader cultural imagination, the notion of theatre that is necessarily both engaged and speculative has only gained more traction; the recent rise of the field of performance philosophy is, if anything, a testament to the fact of a theatre that has renegotiated the terms of the Platonic quarrel.

By returning, in the first chapter of this thesis, to the philosophy of Plato, what was shown was that the relationship between theatre and science, particularly physics, in the twentieth century needed not only to be acknowledged to a greater extent but also to be considered as a significant new development in a very old dialogue. Instances of scientific figures and concepts featuring as elements of plays are

significant in their own right but, within much of the Modernist experimentation with theatre, those specific cases were only one part of a deeper interrogation of the similarities and differences obtaining between theatrical and scientific representation. As first General Relativity and then quantum mechanics effected major revolutions in physics and its self-conception, a number of those figures involved in writing for and about theatre realised that the conditions of those same developments afforded a new way of thinking about theatricality. More particularly, the problematisation of the relationship between subject and object, between reason and embodiment, both appealed to the basic tenets of theatre whilst also providing a certain imperative for rethinking their speculative, or theoretical, potential. The epistemological crisis in physics at the start of the twentieth century resulted in not simply a revised dialogue with philosophy but a triangulation of those two disciples with the theatre: each have their own methods and aims but what has been argued is that, most fundamentally, their concerns are the same.

As the analysis of the theatrical work and theory of Beckett, Brecht, and Stein showed, the manner in which theatre and performance was reconsidered in dialogue with the situation in contemporaneous physics was not necessarily uniform. Whilst Stein's understanding of what plays could be developed as in many ways a theatrical counterpart to Bohr's philosophy of complementarity and was concerned by the difference between written and performed language, Brecht was primarily interested in exploring the idea of form of spectatorship that was capable of influencing social reality. Similarly, Beckett also differed in his approach, moving away from language and concerns of political efficacy to focus more pointedly on using the theatre to think about, and make visible, the basic limits of rationality and scientific knowledge. Central to the work of all three figures, however, was a critical engagement with the notion of theatre as being a medium that is crucially determined by embodied

presence, both on stage and in the auditorium; the significance of science to each of their radical re-conceptualisations of theatrical praxis was connected most strongly to the foregrounded materiality of stage performances. Their responses to the situation that emerged in twentieth-century physics stand, as such, as important contributions to the establishment of performance as an autonomous, speculative, aesthetic.

Whilst this thesis has worked to establish a broad precedent and theoretical basis for analysis of theatre in conjunction with science, especially physics, it must also be acknowledged it that poses as many questions for future consideration as it provides answers to others. Although Beckett carries the chronology of this study up to almost the final decade of the twentieth century, it is primarily the physics and theatre of the first half that are analysed here, and a Modernist sensibility; what it may well prove fruitful to explore further in the future, therefore, is the way in which the relationship continued to either evolve or remain the same. What, it might be asked, can be made of the increased use of technology on the stage, or the gradual rise of the landscape play in contrast to the perceived datedness of Epic theatre? Have developments in science since the 1920s continued capture the theatrical imagination in the same manner as General Relativity and quantum mechanics so notably did, or do they still remain amongst the primary reference points? To what extent can the influence of the forms of theatre analysed in this thesis be traced in the development of other fields and disciples more generally?

For now, those questions must remain unanswered here, but it is hoped that this study has provided a means by which they might be addressed in subsequent research. Having noted, at the outset, a relative absence of criticism on the subject of Modernist theatre, theatricality, and science, it is to be contended now, at the close, that a step, by no means exhaustive, has been taken to remedy that situation.

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